

*Pacific*  
**PULP & PAPER**  
*Industry*



## Felts, too, have changed

**T**HE stuttering one-lunger of 1903 has become the swift, smooth, silent motor-car of today. How? Through the research and engineering genius of the automobile industry.

In these last 35 years, papermakers' felts have experienced a similar improvement in efficiency. Longer felt life; smoother, steadier performance; lower production costs—these are some of the benefits papermakers have enjoyed through the application of research and inventive genius to felt making.

It is natural that F. C. Huyck & Sons, always a pioneer, should have introduced the most important improvements in felts and felt service.

If you are not getting the benefits of the *better* felts available today, if you are not enjoying the services of Huyck experts in solving your problems, let us tell you about the modern felts and services available to your mill.



## **F. C. HUYCK & SONS**

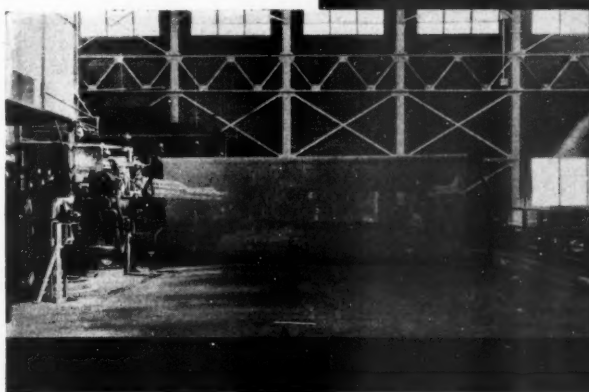
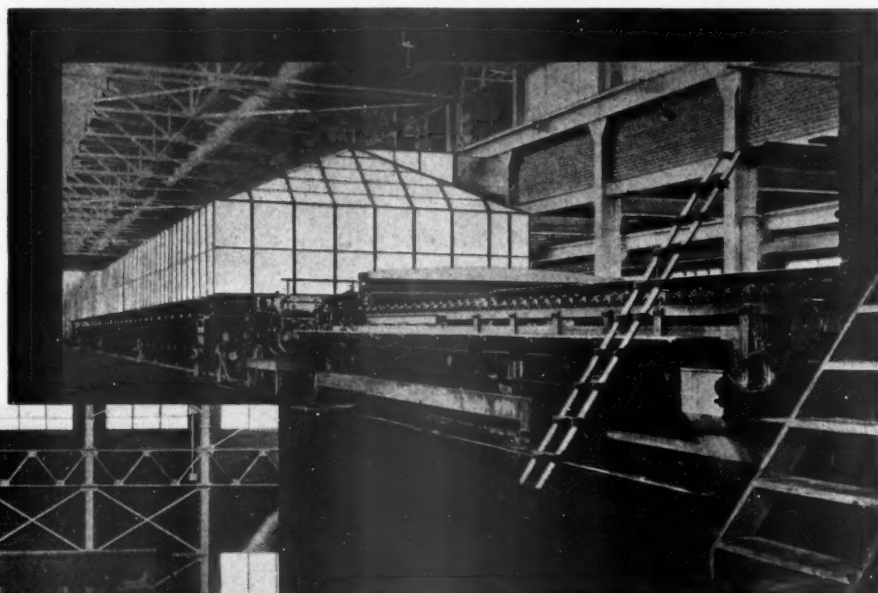
### **KENWOOD FELTS • ALBANY, N. Y.**

*Pacific Coast Representatives*  
**Pacific Coast Supply Company**

Pittock Block—Portland, Oreg.  
708 White Bldg.—Seattle, Wash.  
343 Sansome St.—San Francisco, Calif.

# THE BELOIT

## *Removable Fourdrinier*



● Wire is strung in aisle while machine is in operation, if desired.

● Fourdrinier pit can be washed out while wire is being installed.

● Wire bundle is taken from shipping box and mounted directly in carriage—no chucks to apply—no further handling as bundle is unreeled as carriage moves along to form wire loop.

● All wire poles are mounted in carriage before loop is formed. Inside poles are inserted inside the wire.

● Safest — most convenient — quickest method of installing Fourdrinier wire.

THE BELOIT WAY



IS THE MODERN WAY

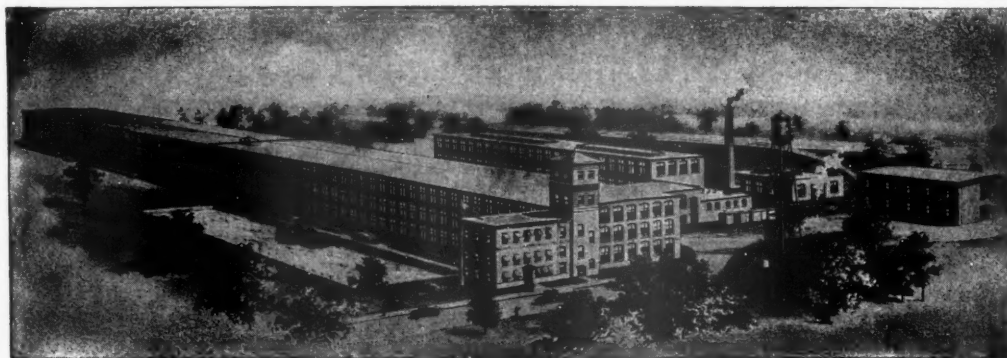


offers a complete range of  
dyestuffs to meet every fast-  
ness requirement for paper.

**GENERAL DYESTUFF CORPORATION**

435 HUDSON STREET • NEW YORK, N. Y.





THE HOME OF ALBANY FELTS

*Felts For:*

Leather Board  
 Straw Board  
 Box Board  
 Bristol Board  
 Tissue  
 Bond  
 Writings  
 Insulation Board  
 Mulch Paper  
 Straw Paper  
 Wrappings  
 Glassine  
 Newsprint  
 Cellucotton  
 Wall Board  
 Soda Pulp  
 Sulphite Pulp  
 Building Papers  
 Asbestos Papers  
 Cement Shingles  
 Blotting  
 Book  
 Chip Board  
 News Board  
 Cover  
 Kraft  
 Ledger  
 Manila  
 Rope  
 Ground Wood Pulp  
 Binders Board  
 Toweling  
 Condenser Paper  
 Bottle Cap Board  
 Catalogue  
 Envelope  
 Container Board  
 Hanging  
 Coating Boards  
 Coating Papers  
 Tag Board

## SPECIALIZATION

Ours is a specialized business—that of making *good* paper machine felts. It is different from any other textile business in the world.

Our designers, spinners, weavers, research chemists, finishers, are all specialists with years of sound experience in felt making. Some of them have followed their particular line of work for 25 years.

Machinery, too, is *special*. Much of it is of our own design.

Our resources and world-wide experience have led the paper industry to bring all manner of problems to us involving the use of felts.

If you have an unusual machine condition which is bothering you, let us know about it. Perhaps we can help you.

## ALBANY FELT COMPANY

ALBANY, NEW YORK

---

SELLING AGENTS  
for WOOD PULP and PAPER

---



---

**BULKLEY DUNTON PULP CO., Inc.**  
295 MADISON AVENUE      NEW YORK, N. Y.  
CABLE ADDRESS: BULKTON

---



*The Journal of the  
Pacific Coast Industry*

JANUARY • 1939

Vol. 13 — No. 1

**MILLER FREEMAN**  
President

**LAWRENCE K. SMITH**  
Manager

**HARLAN SCOTT**  
Editor

**JOHN E. BROWN**  
Associate Editor

**KEMPER FREEMAN**  
Production Manager

**MILLER FREEMAN, JR.**  
Circulation Manager

#### OFFICES

Seattle

#### PUBLISHING OFFICE

71 Columbia St.  
Tel. MAin 1626

Portland

John E. Brown  
1220 S. W. Morrison St.  
Tel. AT. 8890

San Francisco

Stuart F. Leete  
121 Second St.  
Tel. GA. 5887

Los Angeles

Calvin D. Wood  
124 W. Fourth St.  
Tel. MUtual 5857

Copyright, 1939, by the Consolidated Publishing Co. Contents may not be reproduced without permission.

#### SUBSCRIPTION RATES

United States and Canada.....	\$4.00
Other Countries.....	\$5.00
Single Copies.....	\$ .35
Review Number.....	\$1.00

## Unbalanced Foreign Exchange Affecting Employment in American Wood Pulp Industry

Decline of Swedish and Finnish currencies in relation to the dollar permits foreign producers to sell pulp in the United States at prices unprofitable to American producers, causing curtailment of operations.

**A**LTHOUGH the American paper industry operated at 78.8 per cent of capacity in the first four weeks of December 1938 as compared with but 56.4 per cent in the same period in 1937, the American pulp industry was operating at a far less percentage of capacity.

Why was this the situation? With the paper industry steadily improving its operating ratio during the latter half of 1938 it would naturally be expected that the American wood pulp industry would show a similar improvement.

One of the principal reasons, if not the most influential one, why the American manufacturers of wood pulp for sale to American paper mills have been unable to raise their production to the high level of the paper industry, lies in the foreign exchange situation.

The change during recent months in the relation between the Swedish and Finnish currencies and the American dollar is adversely affecting the wood pulp industry in the United States. The situation became serious in the latter part of 1938 and early in 1939 when the exchange dropped to the lowest point since 1933 except for a brief period during the war crisis of last September, and the foreign pulp producers obtained an advantage over the Americans in the United States market of around \$4.00 per ton on bleached sulphite and about \$3.00 per ton on unbleached sulphite.

Since the American pulp producers announced in November that the \$50 per ton price of bleached sulphite and the price of \$42 per ton for unbleached sulphite would be continued through the first quarter of 1939, the price of imported pulp has dropped to about \$47 per ton for bleached sulphite and to around \$37 to \$38 for unbleached sulphite delivered at Atlantic ports.

● It is believed by American producers that the foreign pulp manufacturers would not go this low were it not for the drop in the value of the Swedish kronor and Finnish Finmark in relation to the American dollar. At this time, early in January, the decline in the relationship of the currencies enables the Swedes and the Finns to sell bleached sulphite for about \$4.00 per ton less, \$46-\$47, AND STILL OBTAIN THE EQUIVALENT IN THEIR OWN CURRENCIES OF \$50-\$51 PER TON. Likewise, they can sell unbleached sulphite for \$37 per ton in the United States and receive the equivalent in their own currencies of \$40 per ton.

In their competition with the American and Canadian pulp producers for the pulp business in the United States, the Swedes and the Finns have simply taken advantage of the exchange situation to undersell the American and Canadian producers. They have also employed their advantage in the converting or "marrying" of 1938 contracts to additional tonnage for 1939, thereby depriving American and Canadian pulp mills of much business they would normally expect from their regular customers.

#### Employment Reduced

● In some cases the lower prices are being met by the American producers: in others they feel it is better not to take the business than to lose money on it. The result is curtailed employment either way. If an American mill takes the business at the price set by the Swedes and Finns, it must reduce costs which affects employment somewhere along the line. If it refuses the business at the below cost price, the mill doesn't run and the employees don't work.

*Actually, how much increase in  
See Page 38!  
pulp imports from Sweden & Finland??*

### Decline of Pulp Prices More Damaging To American Than to Foreign Producers

On January 3, 1938, the price of Bleached Sulphite Pulp was \$60 in the United States. On January 3, 1939, the price had declined to \$47, a drop of \$13 per ton. The American pulp mills selling on the market suffered the full force of this drop.

However, due to the decline in the value of the Swedish kronor against the dollar, Swedish pulp mills lost but \$8.37 per ton on sales in the United States, which gives them an advantage of \$4.63 per ton over their American competitors.

Likewise, the Finnish pulp producers lost but \$9.08 instead of the full \$13 because of the drop in the value of the Finmark against the dollar, which gives them an advantage of \$3.92 over the American wood pulp mills who produce pulp for sale in the United States.

### Pulp Exports Affected, Too

Exports of wood pulp from the United States reached a high point in 1937 but have declined drastically in 1938 due partly to general business conditions and to the drop in the British pound and its allied currencies.

The exportation of paper making pulps has been almost eliminated within the past several months for it now requires 10.8 British pounds to pay for a ton of American bleached sulphite worth \$50, while a year ago it required but 10 pounds. Those foreign buyers whose currency is allied to the pound are not going to pay a premium for American pulp when they can buy from Sweden and Finland on the same exchange basis as a year ago.

Hence the foreign business of American pulp mills is almost nil today. This is extremely unfortunate as the volume was steadily increasing from 1932 through 1937.

So the American pulp mills manufacturing wood pulp for sale on the market are frozen out of the export market and badly hurt in their own domestic market by the fluctuations of foreign exchange.

And the workmen in the American pulp mills find their income either reduced or cut off entirely for long periods.

### Whose Responsibility?

Where does the responsibility lie for this situation? It rests directly upon the Federal government which is responsible for the commercial relationships between the United States and other countries.

This is not a partisan matter. It so happens that the present situation has developed under a Democratic administration, but in 1931 and 1932 the same problem arose under a Republican administration, and nothing was done to alleviate the suffering of American industry and its employees at that time, either. The matter became so acute, so many industries were unable to compete throwing thousands of men and women out of work, that shortly after his inauguration as President in March of 1933, Franklin D. Roosevelt devalued the dollar. This action brought the dollar and the British pound together with its allied currencies back into a more normal relationship for the time being but it did not provide insurance against future fluctuations of the exchange and their resultant disastrous effects upon American citizens.

An attempt was made to guard against the damaging effects of foreign exchange variations by setting up an American stabilization fund to work with the British fund in maintaining the pound-dollar relationship upon a normal basis. As this fund operates in secrecy it is not known whether it has been used in the last few months to try and hold up the pound or whether it was not strong enough to support the pound against the bearish psychological effects operating against the pound as a result of the Czechoslovakian crisis and the Munich pact.

Anyway, it did not protect American industry against a serious drop in the value of the pound, from

\$5.00 on January 3rd, 1938 to \$4.625 on January 3, 1939, a decline of 37 1/4c.

### Could the Trade Agreements Protect?

The Federal government could invoke the monetary clauses in the Swedish and Finnish Trade agreements to protect the American wood pulp industry as well as other industries in competition with goods imported from those two countries.

Article X of the Trade Agreement with Sweden, which became effective on August 5, 1935, says:

"In the event that a wide variation occurs in the rate of exchange between the currencies of the United States of America and Sweden the Government of either country, if it considers the variation so substantial as to prejudice the industries or commerce of the country, shall be free to propose negotiations for the modification of this agreement; and, if an agreement with respect thereto is not reached within thirty days following receipt of such proposal shall be free to terminate this Agreement in its entirety on thirty days' written notice."

The same clause is included in the Trade Agreement with Finland, which became effective on November 2, 1936.

There is another clause in the Agreement with Sweden which might be employed as a basis for protection against injury to American industry and its employees. It is Article XII which says in part:

"... the provisions of this Agreement shall not extend to prohibitions or restrictions

- 1/ relating to public security;
- 2/ imposed on moral or humanitarian grounds;
- 3/ designed to protect human, animal or plant life or health . . ."

These provisions allow much latitude if a government is disposed to protect its citizen's interests. The Finnish Agreement contains a similar clause but omits the first "relating to public security."

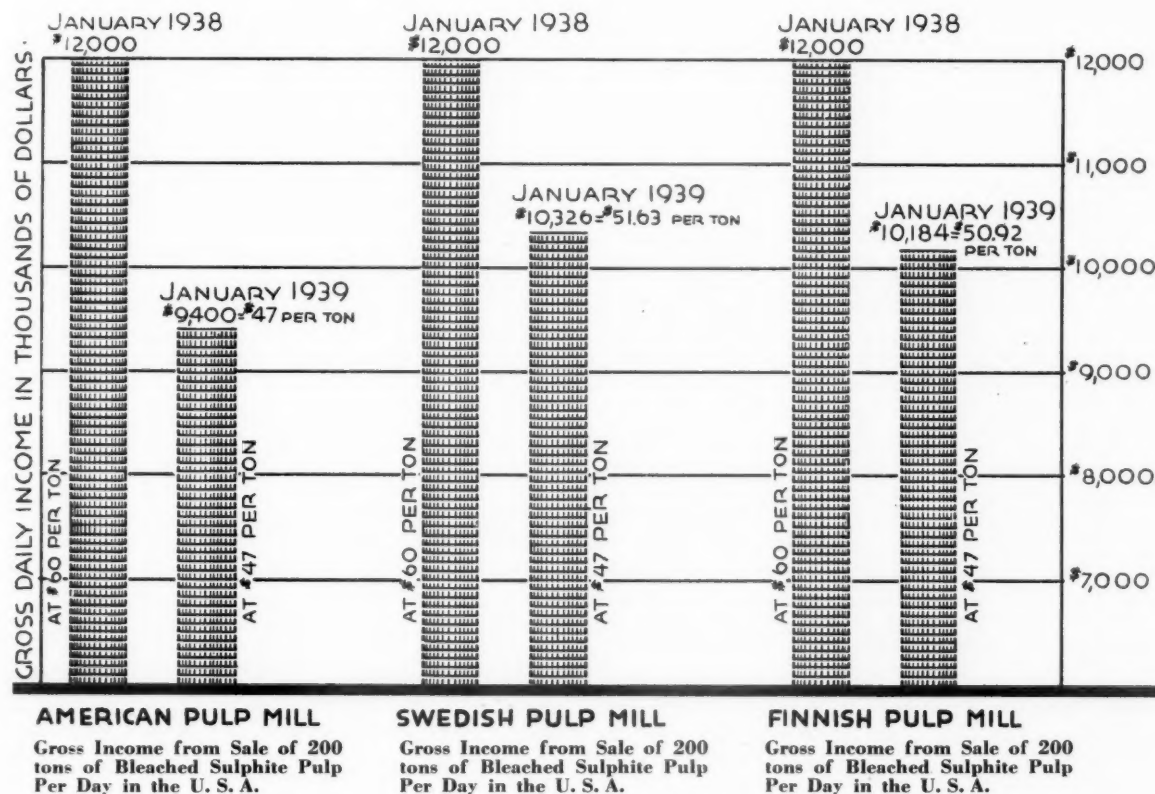
### Other Avenues of Protection

The easy way to meet the competition of the lower value British pound would be to devalue the dollar still more in terms of gold. But that method involves further inflation within the United States and also embraces numerous other adjustments in the nation's economic



## Comparative Gross Daily Income in January 1938 And 1939 of Three Hypothetical Pulp Mills— American, Swedish and Finnish

Presented in graphical form to provide a direct comparison in one currency of the return from the sale of American, Swedish and Finnish pulp in the United States—The greater return enjoyed by pulp producers in Sweden and Finland at the present time, is due to the depreciation of their respective currencies in relation to the American dollar



● The decline in the British Pound from \$5.00 on January 3, 1938, to \$4.625 on January 3, 1939, accompanied by the drop in the Swedish Kronor from \$2.580 to \$2.381 and the Finnish Finmark from \$.0222 to \$.02075, is contributing in large measure to unemployment in the United States Wood Pulp Industry, because the drop in exchange permits Sweden and Finland to lower the price of pulp to levels unprofitable for U. S. producers and still maintain their own income on a profitable level.

● This graph presents an hypothetical example of this serious problem now facing the United States Wood Pulp Industry.

Each of the three imaginary mills is selling 200 tons of bleached sulphite pulp per day in the United States. A year ago with the pound at \$5.00 their incomes were in balance. Today, at a price of \$47 per ton the United States pulp mill receives a gross income of \$9,400 per day.

● But the Swedish pulp mill, due to the unbalancing of the exchange, receives kronor equivalent to \$10,326 for 200 tons of the same grade of pulp, or an income per ton of \$51.63, \$4.63 more than received by the American mill. The Finnish pulp mill receives Finmarks equivalent to \$10,184 or \$50.92 per ton, \$3.92 more than the American pulp mill receives.

**In Purchasing Power the American Pulp Mill Receives \$926.00 LESS Per Day for 200 Tons of Pulp Than is Received by its Swedish Competitors — \$784.00 LESS Per Day Than its Finnish Competitors**



life. However, devaluation of the dollar would aid American exports, particularly to those countries whose monetary systems are allied with the British pound.

But it might be necessary within a few years to devalue the dollar again were this system followed. Continued cheapening of a nation's money to obtain temporary benefits eventually ends in nothing but grief.

One method the Federal government might adopt which would pro-

tect our own market but would not aid in exports, is the adoption of counter-vailing duties to offset the advantages accruing to the Swedes and the Finns through the drop in the value of their currencies in relation to the dollar.

Some countries employ the counter-vailing duty as a matter of regular policy, not only to offset automatically the fluctuations of exchange but to eliminate advantages foreign manufacturers may obtain in the way of bounties or subsidies from their own governments.

The United States could apply this form of duty to level out the vagaries of foreign exchange and to prevent injury to American industries and their employees. A fixed relationship would be determined between the pound and the dollar, the kronor and the dollar and the Finmark and the dollar. As long as foreign exchange held to this predetermined level there would be no duty, but immediately upon the decline in the value of the foreign currencies in relation to the dollar the duty would automatically compensate for the decline so that the foreign manufacturer would not benefit from the lower value of his country's money as is the case today. This would tend for stability in the market price of many products sold in the United States including wood pulp, for the foreign producer would realize that he could obtain no advantage from a currency decline and therefore would not cut his prices in the United States.

The problem of depreciated foreign currencies is a vital one arising periodically to damage industry in this country and consequently to reduce the income of

### Decline in Foreign Exchange Benefits Swedish Pulp Producers Selling in the United States

Showing how the Swedish pulp producer can sell for fewer dollars today than a year ago or three and a half years ago, and receive the same sum in Swedish kronor.

**UNBLEACHED SULPHITE**—(Basis: 144.6 Kronor or \$37, which was the price of Unbleached Sulphite Pulp in the U. S. A. when the Trade Agreement with Sweden became effective on August 5th, 1935)

DATE	Return in Swedish Kronor	Value of Swedish Kronor in Dollars On Date Given	Price at which Sales Could Be Made in American Dollars to Produce 144.6 Kronor	
August 5, 1935.....	144.6	\$ .2559	\$37.00	(Actual selling price)
January 3, 1938.....	144.6	.2580	37.31	
January 3, 1939.....	144.6	.2381	34.43	
			\$2.88	Swedish advantage over U. S. Producers in Dollars per ton, 1939 over 1938.

**BLEACHED SULPHITE**—(Basis: 195.4 Kronor or \$50 per ton, which was the price of Bleached Sulphite Pulp in the U.S.A. when the Trade Agreement with Sweden became effective on August 5, 1935)

DATE	Return in Swedish Kronor	Value of Swedish Kronor in Dollars On Date Given	Price at which Sales Could Be Made in American Dollars to Produce 195.4 Kronor	
August 5, 1935.....	195.4	\$ .2559	\$50.00	(Actual selling price)
January 3, 1938.....	195.4	.2580	50.41	
January 3, 1939.....	195.4	.2381	46.52	
			\$3.89	Swedish advantage over U. S. Producers in Dollars per ton, 1939 over 1938.

American workmen. It is properly the problem of the Federal government and the present administration should, in view of its constantly expressed aim of aiding the "rank-and-file" by a broader distribution of income, adopt a policy of protecting the income of thousands of Americans.

It is a broad problem, not confined to the wood pulp industry but affecting every industry that sells in competition with imports from the countries whose currencies are tied to the British pound. In the aggregate the drop in foreign exchange personally affects millions of Americans.

#### Of What Value Trade Agreements?

● Of what value to the United States are Reciprocal Trade Agreements when the ratios of currency exchange at the time they were concluded, are not maintained? At the present time, with the pound and its allied currencies down in value in relation to the dollar, the Trade Agreements with Great Britain,

Sweden and Finland give greater advantages to those nations than were intended when the agreements were signed. And, at the same time the present situation places the American manufacturers of export goods in a position where they cannot export, so the agreements are of no value whatever to them.

Generally the people of the United States believe that Secretary of State Cordell Hull is sincere in his efforts to promote world trade through the Reciprocal Trade Agreements, but failure of the Federal government to protect the American dollar against the pound and its affiliated currencies will nullify his efforts and throw the whole Trade Agreement program into public disrepute.

#### Of What Value Sustained-Yield, Reforestation?

● In recent years the public has heard much about the need for the sustained-yield operation of American forests, about the necessity for reforestation to maintain our supply of wood for lumber and chemi-

cal usage. These points have been publicly emphasized not only by the President, but also by the Secretaries of Agriculture and of Commerce, by the Chief Forester and by the entire U. S. Forest Service.

They have talked about the need for more Federal control of forests, about private industry's failure to cut timber on a rotating basis, to provide for the future through reforestation. Has there been anything said about markets? Not by the Federal men.

Markets are the key to the entire forestry situation in the United States and in every other tree growing country. It should be the responsibility of the Federal government not only to protect the existing markets for forest products but to develop them.

"THE MOST EFFECTIVE WAY TO ENCOURAGE THE GROWING OF TREES IS TO DEVELOP PROFITABLE REASONS FOR CUTTING THEM DOWN," said A. G. T. Moore, Manager, Department of Conservation, Southern Pine Association, in a talk last November.

### Decline in Foreign Exchange Benefits Finnish Pulp Producers Selling in the United States

Showing how the Finnish pulp producer can sell for fewer dollars today than a year ago or two years ago, and receive the same sum in Finnish money.

**UNBLEACHED SULPHITE**—(Basis: 1,851.85 Finmarks or \$40 per ton, which was the price of Unbleached Sulphite Pulp in the U. S. A. when the Trade Agreement with Finland became effective on November 2, 1936).

DATE	Return in Finmarks	Value of Finmark in Dollars on Date Given	Price at which Sales could be made in American Dollars to Produce 1,851.85 Finmarks	
November 2, 1936.....	1,851.85	\$ .0216	\$40.00	(Actual Selling Price)
January 3, 1938.....	1,851.85	.0222	41.11	
January 3, 1939.....	1,851.85	.02075	38.43	
			\$2.68	Finnish advantage over U. S. Producers in Dollars per ton —1939 over 1938.

**BLEACHED SULPHITE**—(Basis: 2,685.2 Finmarks or \$58 per ton, which was the price of Bleached Sulphite Pulp in the U. S. A. when the Trade Agreement with Finland became effective on November 2, 1936)

DATE	Return in Finmarks	Value of Finmark in Dollars on Date Given	Price at which Sales could be made in American Dollars to Produce 2,685.2 Finmarks	
November 2, 1936.....	2,685.2	\$ .0216	\$58.00	(Actual Selling Price)
January 3, 1938.....	2,685.2	.0222	59.61	
January 3, 1939.....	2,685.2	.02075	55.72	
			\$3.89	Finnish advantage over U. S. Producers in Dollars per ton —1939 over 1938.

If the Federal government wants to "encourage the growing of trees" it should "develop profitable reasons for cutting them down." Private operators have been trying to do this, particularly those engaged in the wood pulp industry on the Pacific Coast, but they are helpless against such problems as that of foreign exchange which is the province of the Federal government.

How can the American wood pulp industry pay the extra costs of sustained-yield operation, reforestation, fire protection along with high wages, when the fluctuations in foreign exchange permit their Swedish and Finnish competitors to sell pulp (which is duty free) in the United States at prices

that are at or below American costs?

#### Of What Value High Wages?

● From the point of view of the men working in American pulp mills of what value are high wages if they don't work because of cheap foreign imports?

American pulp mills pay the highest wages in the world, and the Pacific Coast mills far higher than the average for the rest of the country. But if they cannot operate, these high rates of pay are not of as much value to their employes as half the rate would be if the mills were running.

Again the problem belongs to the Federal government to protect these high wages, to make it possible for

the industry to operate so the men can work.

Getting down to bedrock what we, as citizens of the United States, desire more than anything else is the opportunity to work steadily at good wages, and we sincerely believe it is a primary obligation of the Federal government to promote as well as protect conditions which will enable us to enjoy the maximum amount of work at the maximum pay.

The Federal government can help materially in attaining this objective by protecting American industry and American citizens against the damage wrought by the vagaries of foreign exchange.

## Japan Buys Another 63,000 Tons of Dissolving Pulp

Rayonier Incorporated to Ship  
27,688 Short Tons in First Quarter

● Following closely upon the issuance of exchange permits for the importation of 65,000 metric tons of dissolving pulp in the month of December, Japan announced late in December the granting of exchange permits for 58,000 metric tons of dissolving pulp to be imported in the first three months of 1939. This makes an importation of 123,000 metric tons of dissolving pulp to be imported within a four month period.

The second announcement reached the Pacific Coast in a radiogram received December 20th by Philip Crawford, acting manager of the Bureau of Foreign and Domestic Commerce of the U. S. Department of Commerce in Seattle. The radiogram from the United States Commercial Attache in Tokyo stated:

"The Japanese government, Ministry of Commerce and Finance, has granted exchange permits covering the importation of 58,000 metric tons (63,933 short tons) of rayon grade wood pulp during the first three months of 1939. The import

permit for this pulp was granted March 12, 1938.

"Arrivals scheduled during the first three months are as follows: January, 25,100 metric tons (27,668 short tons); February, 16,700 metric tons (18,408 short tons); March, 16,200 metric tons (17,857 short tons).

"From the West Coast of the United States Japan will receive 25,100 metric tons (27,688 short tons), and from the East Coast 2,000 metric tons (2,205 short tons). The balance of the 58,000 metric tons will come from Europe, 30,900 metric tons or 34,061 short tons."

● As the sole producer of the dissolving pulps on the United States side of the Pacific Coast, Rayonier Incorporated, with mills operating at Grays Harbor, Shelton and Port Angeles, will ship 27,688 short tons to Japan in the first quarter of 1939.

Japan is buying dissolving pulps because her reserve stocks have been exhausted during 1938 while she was out of the market, from April until December. As govern-

ment measures have resulted in almost the entire elimination of filament rayon, cotton, wool and silk textiles from the Japanese domestic market, the Japanese civil population are now reported to be largely dependent upon staple fiber textiles which are manufactured from wood pulp. The importation of dissolving pulp is therefore a domestic necessity inasmuch as domestic wood pulp production is inadequate to take care of the growing demand.

This is but one side of the Japanese pulp problem. Another is the need for pulp to convert into both rayon and staple fiber yarns and textiles for export to obtain foreign exchange. Prior to the placing of restrictions on domestic consumption of textiles made from materials other than staple fiber, the importation of wood pulp was very largely for conversion into rayon and staple fiber yarns and textiles for export.

Wool, cotton and filament rayon are now said to be confined to the manufacture of textiles for the army, navy and export.



## Clarksburg Paper Company Making Containers in Oakland

● The Clarksburg Paper Company, with headquarters in Pittsburgh, Pa., recently erected a new fiber container manufacturing plant directly adjacent to the Hazel-Atlas Glass Company factory in East Oakland, California.

The building is of the latest design and construction being approximately 100 by 200 feet in size, built of steel, concrete and sheet metal.

Containers are said to be manufactured only for the Hazel-Atlas Glass Company at this time. In charge of operations is S. R. Lipinski, who comes here from the East.

The company is said to be using board supplied by Fibreboard Products, Incorporated, and among other modern machinery they have installed a 63 inch corrugating machine.

## Spaulding Pulp Mill In Operation

● Operations were resumed at the plant of the Spaulding Pulp & Paper Company, Newberg, Oregon, at the first of January, after being shut down through December. Production will be continued all through January, and present indications are that the mill will be kept in operation during most of February, an improvement in orders being noted. No Japanese business has been booked so far, however. Sheet pulp production now averages 80 tons per day.

## Clifford Named General Manager of Envelope Corp.

● Bert Clifford, who has been with the Envelope Corporation, San Francisco, for the past eight years, has been appointed general manager of the company, by M. L. Davidson, president.

Before going into the envelope manufacturing business Clifford was purchasing agent for Nestle's Milk Products Company.

Taking Clifford's place as sales manager of the Envelope Corporation, is Tom Donahue, who also has been with the company for the past eight years.



**BERT CLIFFORD, General Manager, Envelope Corporation**

## Forecast Increased Car Loadings in First Quarter

● The Pacific Northwest Railway Advisory Board issues a quarterly forecast of railroad car loadings to aid the roads in providing needed equipment.

For the first quarter of 1939, the Paper, Paper Products and Pulp committee headed by P. H. Spencer, reports as follows:

"From the compilation of replies to the questionnaire received from members of the committee, it is estimated that 1,907 cars will be required for paper products loading in the first quarter of 1939. This compared to the actual carloading of 1,816 cars in the first quarter of 1938, indicates an increase of 5 per cent. We believe this estimated increase to be very conservative, and would not be surprised if the actual carloadings prove to be more."

## Earl Thompson On Business Trip to Hawaii

● Earl G. Thompson, Pacific Northwest representative of the Great Western Electrochemical Company of San Francisco, sailed from that city December 31st on a business trip to Hawaii.

Mr. Thompson is expected to return to his home in Seattle early in March.

## Middlebrook Joins Superintendents Association

● Paul F. Middlebrook, manager of the Lebanon, Oregon, sulphite pulp and paper mill of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, recently became a member of the American Pulp & Paper Mill Superintendents Association.

## Carl Kley Leaves On Eight Months Trip

● Carl W. Kley, export manager of the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, left San Francisco early in January on a business trip to a large number of foreign countries. During the eight months he will be away Mr. Kley will visit countries in South America, Europe and Africa.

## California Collects Large Unemployment Fund

● Otto Hartwig, advisor on social security matters for the Crown Zellerbach Corporation, Portland, recently visited California and spent some time discussing the application of the California compensation law with the administrative group of the Unemployment Compensation Commission.

It is interesting to note that during the 1937-1938 period about \$129,000,000 was collected by the State of California, of which employees alone paid in around \$40,000,000. During 1938, the commission paid out, it is estimated, about \$26,000,000, which leaves a large balance in the fund.

In view of these figures, it is believed possible that the California Unemployment Compensation Act will be amended to change the benefit structure, as otherwise it is probable that during 1939 only about \$20,000,000 would be paid out.

## Pioneer to Make Solid Fiber Containers

● The Pioneer Division of the Flintkote Company with a large board mill in Los Angeles, will add to their present line of containers a solid fiber box after the installation during the first month of the year of the necessary machinery to manufacture this item. A new building is under construction which will provide added warehouse space as well as house the department devoted to the manufacture of the new solid fiber line.

## Washington Industrial Rate Reduced by Safety Work

● The basic rate for industrial insurance for the pulp and paper mills in the State of Washington for 1939, has been reduced from six mills per man hour in 1938, to a new low of four mills. The rate paid by each mill is composed of 40 per cent of the state base rate and 60 per cent of the actual claim cost per man hour for the individual mill during the previous five years.

In 1935 the rate was 14 mills per man hour; in 1936 it was 10 mills; in 1937 it was seven mills; in 1938 six mills, and in 1939 four mills. The continued downward trend is an encouraging indication of the beneficial effects of safety work being carried on by the industry, and is a credit to the combined cooperation of management and employees.

## West Linn Old Timers Hold Reunion

● Old timers of West Linn, Oregon, met at the West Linn Inn on December 20 for the annual banquet given by the Crown Zellerbach Corporation for their retired employees. Short talks were given by a number of those present, and the early days at the mill were the subject of much reminiscence.

Those attending the gathering were: A. M. Sinnott, Joe Lynch, J. A. Ream, Sr., Clint Cole, Harry Baxter, E. A. Leighton, Thomas Warner, Olaf Larson, Si Mosier, E. L. Shaw, Grant Criteser, Frank Forsberg, D. M. Shanks, F. A. Burdon and Vernon Swift. Clarence Bruner, resident manager at West Linn, presided at the meeting. Also attending was M. J. Otis, assistant resident manager, J. A. Ream, personnel and safety director, and W. Little, assistant office manager.

The continued interest of the retired employees reflects the loyalty of the men to the company, and the attitude of the company, which still regards the retired men as employees.

Two members were unable to be present: W. J. McKillican and E. S. Jarrett.

## Paper Men Visit Coast

● O. M. Curtis, S. D. Warren Co., is a Pacific Coast visitor during January. J. F. Weunchel, sales manager of the Grays Harbor Pulp & Paper Company, Grays Harbor, Washington, was a San Francisco visitor last month. Wm. C. Wing, Sr., retired president of the Fox River Paper Company, Appleton, Wisconsin, and Mrs. Wing, were recent San Francisco visitors. Wing stated that it was his intention to make his home in San Francisco and Honolulu in the future.

# New Ideas in Packaging Feature Frozen Food Exhibit

Held in Seattle December 15th and 16th

● The rapid expansion of the frozen food industry in the Pacific Northwest and the accompanying search for the perfect package, was evident from the number of exhibits and the attendance at the annual meeting of the Northwest Frozen Foods Association held at the New Washington Hotel in Seattle December 15th and 16th, 1938.

A variety of new paper and board products were shown, including an ethyl cellulose coated sheet of sulphite waxing stock which was offered by the Kalamazoo Vegetable Parchment Company. C. A. Buskirk, Pacific Coast manager whose headquarters are in San Francisco, stated that this new product with its high gloss surface was designed for the outside wrapper of frozen food packages. All tests made so far, according to KVP, show the ethyl cellulose coated sheet to have greater resistance to moisture vapor than any product they have tested.

The company also displayed a new waxed plasticized vegetable parchment paper for lining frozen food packages.

● Blake, Moffitt & Towne, large Pacific Coast distributors of paper and paper products, had a display which included Sealright fruit and vegetable containers, both inner lined and heavy waxed, a line of waxed papers, and thermoplastic Diaphane bags for fruits, designed to be inserted in open end waxed cartons, made by the Riegel Paper Corporation of New York.

As Pacific Coast agents for the Sylvania Industrial Corporation, Blake, Moffitt & Towne displayed Sylvania's Sylphrap FF cellophane for frozen vegetables and Sylphrap FFBU for wet pack and fruits, and anchor coated sheet.

The Interstate Folding Box Company of Middletown, Ohio, another Blake, Moffitt & Towne account, exhibited inner lined waxed cartons employing either Sylvania Sylphrap or a special thermoplastic impregnated paper. These cartons are shipped flat already lined ready for setting up and filling. Interstate also supplies a special heat sealing

machine to seal the open end of either the cellophane or plasticized paper liner.

Blake also had on display the molastic coated bags and liners and fused cellophane bags for wet or dry frozen packs. Another part of their display featured Snap-lock and Liquid-tite paper trays and boxes, and Paterson Parchment Paper Company's frozen corn wrappers and Durapak.

● The Angeles Paper Box Company of Los Angeles exhibited under direction of their Oregon and Washington representative, L. C. Oman of Seattle, a line of fresh frozen containers made of pure sulphite board, featuring their patented "Quicklocks" box. This box which comes in a variety of sizes to hold from 12 ounces to 5 pounds is shipped flat but quickly opens and snaps into a locked position. These are either hot or cold waxed. Angeles displayed their line of corrugated kraft shipping containers.

● The Dobeckmun Company of Cleveland and Oakland exhibited a new Tight-Pak waxed carton, shipped flat with a parchment paper liner, coated with what they described as an exclusive development. It is a plasticized sheet of parchment that is said to be water and moisture vapor tight.

● Western Containers, Incorporated of Seattle, had a booth with signs telling of their work as custom box makers for the frozen foods industry in the Northwest.

● The Zellerbach Paper Company, with headquarters in San Francisco and branches in all western cities, presented a complete line of products for the frozen foods industry, including waxed sulphite board cartons and kraft corrugated and solid fiber shipping cases manufactured by Fibreboard Products, Incorporated.

Zellerbach Paper also displayed the complete line of waxed papers produced by the Western Waxed Paper Company of Oakland, Port-

land and Los Angeles, the stock for which is produced by the Crown Willamette Paper Company.

Another display in the Zellerbach group exhibited the products of the Paterson Pacific Parchment Company of San Francisco.

The water and moistureproof cellophane exhibit of E. I. du Pont de Nemours & Company was included in the Zellerbach Paper Company's group.

● The Menasha Products Company of Menasha, Wisconsin, had a large display of their lines for frozen foods under the direction of Owen E. Lyons of Menasha, and Art Jones, Northwest representative.

Included were standard Menasha cartons, Zero-seal waxed papers printed and plain, Parakote heat-sealing bags for wet packs, and Parakote heat-sealing printed labels for use in labeling cartons.

A new development was the Paraply carton which consists of a laminated board and it is recommended by Menasha for dry packs without bags or inner liners.

● Milprint, Incorporated of Milwaukee, Philadelphia and Los Angeles had an exhibit in charge of Stan C. Coumbe of Los Angeles, which attracted attention with a display of goldfish swimming in moisture cellophane bags and the boiling of water in cellophane bags. Milprint offered super-seal cellophane bags of the M. S. T. and M. A. T. grades and a new type of dry adhering adhesive tape made of special paper. This tape is designed to displace transparent cellulose tape, comes in a variety of colors to provide color harmony with the package and has a non-drying adhesive.

Milprint, Incorporated buys waxed paper and glassine made on the Coast for converting in its Los Angeles plant.

Other exhibits at the meeting of the Northwest Frozen Foods Association featured machinery for packaging, sealing, freezing and for the

displaying of packaged foods in retail stores.

Visitors were impressed with the rapid strides made both in volume of production and in the quality of the frozen foods packed in the Pacific Northwest, and, too, by the highly essential part played by paper and other cellulose products in the packaging of the modern fresh frozen fruits and vegetables.

### Newsprint Production Down 25% in Eleven Months

● Production in Canada during November, 1938, amounted to 245,295 tons and shipments to 264,421 tons, according to the News Print Service Bureau. Production in the United States was 78,390 tons and shipments 76,278 tons, making a total United States and Canadian newsprint production of 323,685 tons and shipments of 340,699 tons. During November, 29,644 tons of newsprint were made in Newfoundland, so that the total North American production for the month amounted to 353,329 tons. Total production in November, 1937, was 410,048 tons.

The Canadian mills produced 939,578 tons less in the first eleven months of 1938 than in the first eleven months of 1937, which was a decrease of twenty-eight per cent. The output in the United States was 120,581 tons or thirteen and nine-tenths per cent less than in the first eleven months of 1937, and in Newfoundland 83,238 tons or twenty-five and six-tenths per cent less, making a total decrease of 1,143,397 tons, or twenty-five and two-tenths per cent.

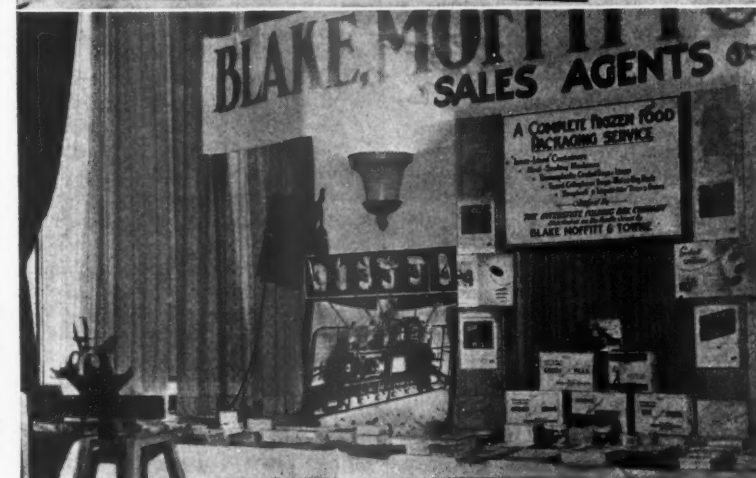
Stocks of newsprint paper at the end of November were reported at 177,157 tons for Canadian mills and 20,702 tons for United States mills, making a combined total of 197,859 tons compared with 214,873 tons on October 31, 1938.

### Walter Hodges In East

● Walter Hodges, Portland machine clothing representative, left January 1 for the East, to spend the month visiting his principals. Among the cities visited included Philadelphia, Providence, Woonsocket, Boston and Montreal. He is expected to return to the Coast about January 29.

### PAPER PLAYS IMPORTANT PART IN THE FROZEN FOODS INDUSTRY

At the right are photographs of four of the exhibits which interested the large crowd attending the annual meeting of the Northwest Frozen Foods Association, at the New Washington Hotel, Seattle, December 15th and 16th, 1938.





# Investigation of the Sources And Characteristics of Dirt In Bleached Sulphate Pulp

by ROBERT M. KUHN\*

**T**HIS investigation was made in a plant producing a high grade of sulphate pulp. The desire to further improve the product by initiating a searching investigation of the origin of dirt, and by eliminating it at its various sources, to increase the efficiency of removal methods, has abundantly justified the study which forms the basis of this report.

Dirt which may affect the quality of finished pulp may be segregated into two main classes upon basis of origin: I. Extraneous dirt, and II. Intra-factorial dirt.

The subject of extraneous dirt has received much attention in Pacific Coast pulp mills, for the raw material most frequently used, Western Hemlock (*Tsuga heterophylla*), contains many loose, infiltrated black knots which are a disturbing factor in the manufacture of sulphite pulp, and therefore quite elaborate methods have been evolved for their elimination from wood to be chipped. The removal of tightly adherent bark from logs of varying dimensions has also necessitated the development of the highly ingenious barking methods that are now commonly used in local mills, and which need not be described in this report.

The dry summers of the western hemlock region are conducive to the spread of destructive forest fires. Trees which are fire-killed and badly charred are not suitable for pulp manufacture, as the charcoal, or carbon, is chemically inert and resists the action of both acid and alkaline cooking liquors. Trees which have survived fires which did not reach sufficient intensity to destroy the stand often contain inclusive fire scars in which quantities of carbon remain. Most of these scars will be exposed when the wood is prepared for chipping. A definite percentage will, however, escape notice, and as a result, carbon in greater or lesser amounts will be included with the chips.

Saprophytic fungi, gaining entrance to the xylem of the tree through fire scars, injuries to the root system and through broken branches, are present in many logs. Obviously decayed wood can be eliminated by proper attention in the wood room, but the hyphae of fungi often extend for a considerable distance through the wood from those portions in which the wood structure has been visibly altered or changed in color. Such wood, in a state of incipient decay, may cause digester losses or reduction in yield that often seem unaccountably high to the practical mill operator.

● It has been assumed, in the past, that the debris of partly decayed wood, black knots, and bark remnants do not affect the quality of sulphate pulp, although they have a pronounced effect in the manufacture of usual grades of sulphite pulp. Most sulphate pulp produced in the past has been intended for use in an unbleached state, that is, for the manufacture of wrapping and bag paper and therefore, due to the comparatively dark color of the pulp, incidental extraneous dirt which did not greatly affect the strength of the sheet went unnoticed. However, when bleaching of sulphate pulp was introduced, such extraneous dirt became a real problem.

The various mechanical elements, i. e. (the lignified sclerenchymatous fibers, the numerous stone cells of the phloem, and the sieve tubes) in the newly formed, as well as in the older portions of the phloem in which resins and gums have been deposited, separate quite readily upon digestion in an alkaline cooking liquor, but are highly resistive to the bleaching agents that are commonly used in pulp manufacture. Therefore, in the manufacture of the bleached sulphate pulp, careful barking again becomes an essential matter.

During the preparation of the chips, from the wood room to the chip bins, the chips are constantly

being contaminated with dirt which must properly be classified as intra-factorial. This dirt consists of wind-borne carbon particles from sawmill burners and stacks, atmospheric dust, and particles originating in the wear and tear of machinery. At first glance it would seem that these dirt particles would be too insignificant in quantity to merit consideration. Surprisingly enough, in this investigation it was found that they deserved careful attention.

The wear of barker knives, chipper knives, conveyor chains and other mechanical devices introduce small metallic particles that cling to the chips. In the finished pulp, these often appear as well-defined rust spots. The complete elimination of this type of dirt seems to be a problem for which no ready solution is at hand.

Additional extraneous dirt is introduced into the plant through organic and inorganic material which adheres to the logs. Other sources of extraneous dirt include the water supply of the plant and the raw materials used in preparing the cooking and bleaching liquor. Wind-borne dirt entering the plant is also a factor that cannot be ignored.

Intra-factorial dirt, or dirt which is actually formed during the operation of the mill, was found in the course of this investigation to be a very important factor. It was assumed, at the outset, that most of the dirt in the finished pulp was of extraneous origin, and, therefore, a very careful study was made of the condition and quality of the chips entering the mill. The methods used and the results obtained are described briefly in this report. Inspection and study of the detritus accumulating in the riffles disclosed the presence of comparatively large quantities of material that had not been noted as accompanying the chips. It became apparent, therefore, that control of dirt in the finished pulp involved a coincidental control of both the extraneous and intra-factorial sources.

\*St. Regis Kraft Company, Tacoma, Washington. Presented at the Dinner Meeting held by the Pacific Section of TAPPI at Port Angeles, Washington, on January 10th, 1939.



### Extraneous Dirt

● In investigating the sources of extraneous dirt, it seemed evident that methods susceptible of interpretation upon a quantitative basis should be used as far as possible, and that accuracy in sampling would be a determinative factor of primary importance.

A plywood box of one-half cubic foot capacity was used to catch samples of chips falling from the inclined chip conveyor belt at the point where this conveyor dumped on the cross conveyor leading to the chip storage bins. Samples were caught hourly and stored in a clean wooden barrel. The chips thus accumulated were in turn dumped from the barrel on a clean surface, thoroughly mixed, and hand-grab samples were removed until a plywood box of one cubic foot capacity was solidly filled with chips. This sample was in turn reduced by repeatedly mixing and halving until a final average sample of one-eighth cubic foot was obtained.

The final sample obtained in this manner was carried to the laboratory, where each chip was individually inspected and brushed clean with a camel's hair brush, all of the litter being accumulated on a sheet of white glossy paper.

The litter removed from the chips consisted of small wood splinters, wood dust or flour and material that could be properly classified as dirt, and in a typical determination attained a gross weight of 2.5 grams per sample of one-eighth cubic foot of chips. As small units of sound clean wood have no practical significance in the study of the dirt problem, the volume and weight of the gross sample of the litter was further reduced by placing successive portions on the stage of a binocular microscope magnifying 10 diameters and picking up with a pointed metal tweezers and discarding all wood splinters, larger portions of sawdust and other recognizable clean wood particles. The final sample thus obtained varied in weight from 0.0187 to 0.1044 grams. This sample was then washed with acetone, and the dry weight of the acetone-soluble extract determined, which for a typical sample was 0.0111 grams, representing resin, oil or fat that might not be instrumental in the formation of spots in the finished pulp.

● The acetone-extracted material was then carefully scrutinized under the binocular microscope and classified. A typical sample included

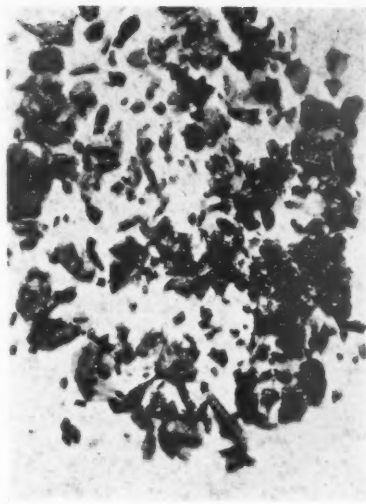


FIGURE 1  
Dark Dirt as obtained from chip brushing. Original magnification 6 X.

char (carbon), silica, rust (iron and steel), fragments of decayed wood, heavy particles of bark, shells of marine organisms and glass. Supplemental check tests were made under the binocular microscope, using the scheme of dirt analysis presented in the accompanying key. Quantitative tests on segregated material from several final samples are now under way, but as the methods that must be employed are necessarily so tedious, the writer regrets that this data cannot be presented at the present time. The accompanying photomicrograph (figure 1) represents a typical final sample of this kind.

While the amount of extraneous dirt in a typical final sample seems so small that it might at first glance be regarded as inconsequential, this is, however, not the case. Assuming that the weight of the final sample is 0.1 grams, this is equivalent to 0.8 grams per cubic foot of chips. Each digester charge consists of 3000 cubic feet, and therefore this amount of dirt is equivalent to 2,400 grams per digester charge. If all of this appeared in the finished pulp it would amount to  $5\frac{1}{4}$  pounds of dirt in the pulp produced by a single digester charge. While it is quite true that some of this dirt will probably be caught in the riffles, be carried away in wash water or will be rejected in screen tailings, it is significant that the dirt count in the mill seems to parallel these sample chip studies in a readily discernible manner, and recognition of this fact has enabled the mill to substantially

improve the quality of the pulp produced.

Extraneous dirt which may be introduced into the plant in water usually consists of siliceous and organic residues such as diatoms and algae, rust from steel and iron water mains and other incidental contaminants. Routine water analysis, which does not form the subject of this report, appears to suffice in accounting for this source of dirt, which in many pulp mills may be seasonally of great importance, due to river flood stages.

The importance of air-borne extraneous dirt was incidentally investigated by the writer. This dirt may consist of carbon (in the form of charred wood or cinders and soot), sawdust and dust. General atmospheric conditions, proximity of other manufacturing plants, and seasonal influences also come into play here. To determine the amount and character of such material entering the plant, sheets of pulp moistened with water and glycerine may be used as collectors, placed in positions near ventilators, open or broken windows, doors and other places where it is possible that dirt may enter the plant. As may be expected, results obtained to date have been very variable, but they have indicated that attention to this detail is advisable.

Extraneous dirt may enter the mill in large quantities in the raw materials that are used. For instance, a sulphate mill, as we all know, uses considerable quantities of lime. Composite lime samples, studied in the same manner as has been detailed in connection with the investigation of the chips, contained 0.05 grams to 0.1 grams of assorted dirt per 100 gram sample. This dirt in a typical sample consisted of gravel and grit, 50 per cent; char (carbon), 25 per cent; rust (iron or steel) 25 per cent. While most of this litter may be removed by screening and riffing, it is possible that mechanical abrasion may reduce many of the dark particles to such small dimensions that they may pass through the screen, over into the cooking liquor, into the digesters, and finally appear as dirt in the finished pulp.

The amount and kind of dirt in salt cake, soda ash and other chemicals, including chlorine and caustic, has not been determined.

### Intra-Factorial Dirt

● Inasmuch as the search for the origin of intra-factorial dirt, or dirt originating within the plant, had as

a primary objective the adoption of adequate control methods, systematic approach to the problem became necessary. Samples of pulp in all stages of manufacture were therefore taken at a multiplicity of points within the plant.

The pulp samples were made up into sheets of standard weight so that the dirt per unit volume could be determined. To provide a translucent sheet, it was found that a nine-inch square weighing 4.5 grams oven dry, was most appropriate. After the location of the dirt in the sheet had been determined by use of the customary view box, it was placed on the stage of a binocular microscope, magnifying 10 diameters, using direct light of sufficient intensity to permit the identification of the material comprising the dirt. In some cases, of course, dirt spots could not be completely classified. Deeply seated particles were teased from the matted pulp with dissecting needles, to bring them more clearly into view.

Dirt counts for each station were plotted and charted so that changes in the character and percentage of dirt at any given station could be shown graphically as control measures were attempted. This procedure, which has been continued, has made it possible to ascertain promptly the origin of intra-factorial dirt and in some cases to eliminate this trouble entirely.

Charts of the nature described are all constructed on a percentage basis, to furnish a true picture of the dirt fluctuation. In addition, total dirt counts, which are the true criteria of grade, are recorded. In classifying the intra-factorial dirt, it may be divided into two main groups, (A) that resulting from chemical action, and (B) that resulting from physical action.

● This investigation has disclosed that carbonate scale, resulting from chemical action, is one of the most common types of intra-factorial dirt. It may develop in the causticizing plant, in the bleaching operation, or in the digester and its appurtenances. In the causticizing plant it may build up in a stratified form on the inside surfaces of the settling and storage tanks. As the liquor level of a tank is periodically lowered, a film of liquor remains on the surface of the metal. When this is exposed to the air for any considerable period of time, carbon dioxide is absorbed from the air, forming a carbonate layer which also includes finely divided particles

of carbon that normally would settle out as a sludge. As particles of this blackened carbonate break off, they are carried through the cooking process and accumulate in the riffles.

If such particles are subjected to abrasion or mechanical action, they may appear in the finished pulp as exceedingly small carbon flecks, consisting, apparently, of colloidal agglomerations. Semi-decayed wood in the digester, containing substantial amounts of carbon dioxide, apparently provide another source of carbonate. Carbonate scale from the bleaching operation varies in color from white through yellow to black.

Rust, or iron oxide, in many and varied forms may build up at a multiplicity of points in the plant. Metals which are rust resistant must be used in all lines and machines where corrosive action is apt to develop, including pumps and valves. In the sulphate mill, rust is not as troublesome as in a sulphite mill, as the alkaline liquors are relatively non-corrosive, but rust as a factor in the origin of dirt can never be disregarded.

Carbon, or char, resulting from intra-factorial operations may be introduced into the plant at a number of points. For example, it is not possible, by any known means, to effect a perfectly complete chemical reaction between the salt cake and the carbon from the black liquor. The result is a slight but definite production of colloidal carbon which remains in suspension in the

dissolving tanks. Eventually most of this colloidal carbon agglomerates and settles out, but despite all precautions some of this material enters each cook, often in association with the carbonate scale which has been mentioned previously. A colloidal suspension of carbon recovered from the white liquor produced the sludge shown in figure 2. The possibility that carbon accumulations may build up in the circulatory system of the digesters has occurred to the writer. Happily, most of the carbon agglomerates originating in the mill are removed by the riffles, as will be noted in figure 3.

Shives, or uncooked wood, present a definite problem as an item which increases the dirt count. The reason for the inclusion of shives in otherwise well-cooked digester charges is rather obscure, and is usually beyond the control of the cook. Empirical observations by the writer point strongly to the possibility that shives result from the cooking of chips that are completely water-logged. Streaks of water-logged wood are common in western hemlock, as the percentage of such streaks increase, the percentage of shives appears to rise.

● The cell lumens or cavities of normal wood contain free water, but are not completely full. When chips of normal wood are cooked, the liquor penetrates rapidly as the pressure is increased, so that there is, at the outset, more or less cooking action in all portions of each chip. When a completely waterlogged chip in which the cell cavities are filled to capacity is subjected to the same cooking conditions, an entirely different set of conditions exists, and since the penetration of the cooking liquor into this kind of chip is the result of osmotic action the effect of pressure to accelerate penetration is negligible. The result is slow cooking and a tendency for the lignin derivatives to remain in the chip, blocking the capillary openings in the closing membranes of the bordered pits and further retarding osmotic action. The result is a partially or incompletely cooked chip which may break up only in part, and which includes partially resinified material which stubbornly resists the action of the usual bleaching agents. Remnants of shives and phloem cells appearing in the finished pulp are undesirable. They can be identified by microscopical means.

Intra-factorial dirt resulting from physical action constitutes a real

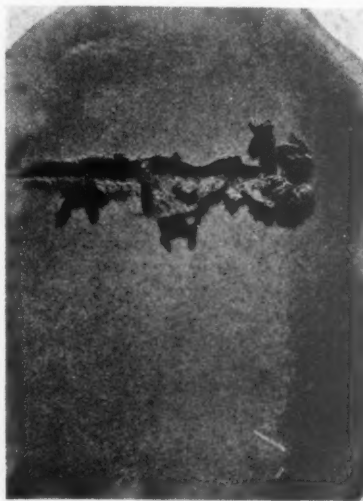


FIGURE 2

Sludge from white liquor storage tank, dried on microscope slide. Furrow across slide indicates structure. Original magnification 6 X.

### Key for Dirt Analysis

When spots of dirt are inspected they may be identified through the use of the following sequence key: For example, beginning with No. 1, if the fibrous structure is not apparent, No. 2 is the alternative and, as indicated by the figure 5 at the end of the line, the next reference would be to line 5. If the spot is not black in color line 6 leads as indicated to line 14, if the spot is brown or red and does not dissolve in acetone, the alternative offered in line 15 must be chosen, and the spot is hence identified as a knot fragment. If the spot is gray, line 14 will not fit, nor will line 15. Lines 16 or 17 will therefore offer the obvious alternatives.

- |   |                         |
|---|-------------------------|
| 1. Fibrous structure apparent   | 3                       |
| 2. Fibrous structure not apparent   | 5                       |
| 3. Sieve plates present in side walls of some of the fibers   |                         |
|   | Phloem or bark          |
| 4. Sieve plates not present in side walls of fibers; bordered pits or ray crossings apparent  | Shives or Slivers       |
| 5. Black in color   | 7                       |
| 6. Not black in color   | 14                      |
| 7. Hard, breaks into bits under pressure  | 9                       |
| 8. Soft, punky  | 18                      |
| 9. Dissolves with effervescence in a drop of HCl  |                         |
|   | Carbonate or Sulphide   |
| 10. Does not effervesce with HCl, but turns blue, when subsequently treated with a drop of a solution of $K_2Fe(CN)_6$                                      | Steel or Iron           |
| 11. Does not turn blue, dissolves in $HNO_3$ , turns blue upon addition of ammonium hydroxide   | Copper or Brass         |
| 12. Unaffected by HCl, $HNO_3$ , dissolves in HFl Silica or Glass   |                         |
| 13. Unaffected by HCl, $HNO_3$ , HFl, remains black   |                         |
|   | Char or Carbon          |
| 14. Brown or red in color, dissolves in acetone   | Resin                   |
| 15. Does not dissolve in acetone  | Knot fragment           |
| 16. Gray, red, black or translucent, dissolves in chloroform, benzene or benzol   | Rubber                  |
| 17. Does not dissolve in chloroform   | Tile or Glass           |
| 18. Splits under dissecting needle, fibrous structure more or less visible when examined under compound microscope, bleaches when treated with hypochlorite |                         |
|   | Knot wood or outer bark |
| 19. Does not tease apart under dissecting needle, unaffected by hypochlorite, spreads when moistened with acetone   | Oil or Grease           |

problem in control. Paint, flaking off from metal surfaces, is a common offender. It is imperative that a metal surface that is to be painted be clean and rust free. Only by pounding or scraping away old paint deposits and by wire brushing the metal until it is bright can greater assurance of freedom from paint scale dirt be gained.

Small particles of rubber can occasionally be found in the finished sheet. These consist of particles from rubber rolls, rubber linings in piping and vats and from hoses. Such rubber particles have been found in pulp from a variety of sources.

Carelessness in operation and clean-up is sometimes the cause of dirt. Operators may become overly enthusiastic and sluice various objects and dirty pulp back into the open deckers and washers. White water frequently carries dirt of many types back into the system. Fragments resulting from wear of machinery, bits of wire, tile and similar objects can be found in finished pulp. They are the result of

natural physical deterioration and little can be done to eliminate them. However, quantities are so small



**FIGURE 3**  
Debris removed from rifflers showing carbon agglomerates and a wide variety of material. Original magnification 6 X.

that they are of minor importance and do not constitute a real problem in a mill that is maintained in proper operation condition.

Slime may occur at rare intervals, but may constitute a definite problem when it is encountered. It may be the result of sharp angles in piping or dead spots in head-boxes or stock chests where stagnant water is apt to collect. The control of slime is a problem that does not fall within the scope of this report.

● A continuous systematic study is vitally necessary in the control of dirt in pulp mills. Experience has demonstrated the importance of recognizing the origin of extraneous and intra-factorial dirt. Substantial economies in operation can be effected by balancing the cost of dirt in depreciating the value of the finished pulp against the cost of control methods. All dirt cannot be eliminated, even through the expenditure of unreasonably large sums. But by recognizing the problem as it exists, from a practical point of view, definite progress in control can be made with real economy in operation.

### Swedish Labor Agreements Extended for One Year

● As neither group filed notice of termination, the agreements between the Swedish pulp and paper mill unions and the mill operators will automatically be continued another year, according to the Swedish Wood Pulp Journal's December 15, 1938, issue. Quoting:

"At a meeting of the representatives of the parties on November 25th it was resolved to prolong the agreements, which will thus, without any notice of termination, be prolonged for another year, i. e., until January 31st, 1940.

"These agreements were made for the sawmill industry by the Sawmill Federation and the Federated Workers of the Sawmill Industry, for the pulp industry by the Pulp Federation and the Federated Workers of the Swedish Paper Industry, and for the paper industry by the Federation of Swedish Paper Mills and the Federated Workers of the Paper Industries.

"Although some of the large companies, e. g., the Kempe and the Marma concerns and Billeruds A.-B., are not members of the employer organizations, they have already agreed, or will soon agree, to the prolongation of the labor agreements on the basis of a more or less unchanged conditions."

### Crown Zellerbach to Have Exposition Exhibit

● The Crown Zellerbach Corporation is exhibiting at the Golden Gate International Exposition, San Francisco. The exhibit will consist of dioramas showing the part that paper has played in history and the part it has played in every day life.



# The Meta-Bisulphite Method For Determination of Residual Chlorine

by A. ORUP and R. I. THIEME\*

## Introduction

WITH the advance of knowledge and methods for the bleaching of sulphite pulp, there has come to be an almost universal acceptance of the multi-stage treatment. This bleaching method usually calls for a direct chlorination of the pulp. Since the greater part of the chlorine demand is supplied in this treatment, a study of its characteristics is of importance. In order to carry on this study we have developed a method for the measurement of excess available chlorine in residues from chlorinated pulp. Later studies prove it to be applicable to the measurement of residual chlorine under all conditions.

A solution of the residues from a chlorinated pulp mixture (containing an excess of available chlorine), possesses rather unusual characteristics. Its pH is low, (1.6-2.2), the exact value depending upon the extent of chlorination and other factors. The consumption of chlorine continues at a fairly steady rate to exhaustion and the rate of exhaustion in this solution seems to correspond to the rate in the pulp mixture from which it comes. During the exhaustion period (which represents the consumption of approximately the last ten per cent of the chlorine present), there is no change in pH. This is true of both the pulp mixture itself and the solution of residues from which the pulp has been removed. The pulp is apparently of little importance at this juncture. Under certain chlorinating conditions, if by the addition of some outside agent, the pH of the solution is raised, the chlorine consumption will proceed to exhaustion at a greatly accelerated rate. At exhaustion the solution will assume reducing characteristics. At the same time the nature of the organic matter present will be changed. This is indicated by a sharp change in color at a pH of approximately 5.

During the chlorination of sulphite pulp there are at least two reactions taking place in the pulp mixture. One has to do with the

direct chlorination of the lignin material on the pulp fiber. This is the predominant reaction in the first part of the chlorination. As the concentration of the dissolved chlorinated lignin material builds up in the solution, a second reaction becomes more important. This reaction involves the use of chlorine by these dissolved products. Toward the end of the chlorination (when the greatest part of the lignin has been chlorinated and dissolved) this second reaction predominates. In dealing with the determination of residual chlorine in residues from chlorinated pulp, these reactions must be taken into consideration. There are undoubtedly more than two reactions taking place; but in any event, the presence of at least two is indicated.

## Objectives and Principles of Proposed Procedure

● In order to measure the available chlorine within a solution of residues from chlorinated pulp it is necessary to maintain pH conditions unchanged. A number of methods and reagents were investigated with this object in view. Preliminary investigations had shown the Arsenite method to be unsatisfactory. A study of its characteristics was made:

Taking a 200 cc sample of solution from a chlorinated pulp mixture, 1/10 N Arsenite reagent was added and a titration curve established. This is shown in figure I.

In the use of this method an excess of arsenite reagent is added and back titrated with iodine reagent. It is always necessary to add an excess which will cause the pH of the solution to reach at least 5.5. This radically changes the conditions in the solution, as is evidenced by a change in color. Apparently the change in pH allows the chlorine in the solution to react more rapidly with the dissolved organic material. Under other chlorinating conditions a rise in pH seems to break down the dissolved compounds with attendant liberation of chlorine. Either of these effects will result in an incorrect amount of measureable available chlorine. As far as these investigations showed, this effect varies widely, depending on the degree of chlorination, concentration of dissolved organic matter, and the method of chlorination. The use of a spot plate with the Arsenite method is not satisfactory because of the position of the end point on the pH curve. That is, a definite change in pH is necessary to reach the end point. Also, due to the nature of the solution, the



A. ORUP and R. I. THIEME of the SOUNDVIEW PULP COMPANY, Everett, Washington, presented their paper at the Port Angeles TAPPI Dinner Meeting.

\*Soundview Pulp Company, Everett, Washington. Presented at the Dinner Meeting sponsored by the Pacific Section of TAPPI, Port Angeles, Washington, January 10th, 1939.



KI in the indicator is broken down in a very short time.

Other methods investigated include the KI method similar to that outlined by V. A. Wilson (1) and the Pontius Modification as outlined by Jackson and Parsons (2). The KI method shows excellent pH characteristics as shown by the following:

Using 200 cc of residues from chlorinated pulp.

	cc added	pH
KI	0	1.83
	2	1.83
	4	1.83
	10	1.83
20% HAc	1	1.88
	10	1.87
Starch	2	1.87
N/10 Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>	2	1.94
	4 end-point	1.90

There are two disadvantages to this method:

1. The end point is poor and lasts only for a short time.

2. Results are erratic. The large amounts of organic matter present seem to introduce complications.

The Pontius Modification, since it employs an alkaline reagent, causes an immediate rise of pH to 6.5.

● Turning to Sulphur Dioxide as a reducing agent, desirable pH characteristics were found. Sulphur Dioxide water was unsatisfactory as a reagent because of its instability. In other respects, however, it showed satisfactory results. Sodium Sulphite solution proved to be unsatisfactory because of its alkaline nature (pH 9.5), and Sodium Bisulphite proved to be instable although otherwise satisfactory. Meta-Sodium Bisulphite (Na<sub>2</sub>S<sub>2</sub>O<sub>5</sub>) solution, however, exhibited excellent properties in all respects. Its pH characteristics are remarkable. A 1/8 normal solution has a pH of approximately 2.8. A 1/16 normal solution has a pH of approximately 4.3. However, since a solution of residues from chlorinated pulp mixture is well buffered, when Meta-Bisulphite reagent is added, its pH is unchanged. It makes no difference what the concentration of the Meta-Sodium Bisulphite may be. Typical titration data are given as follows:

200 cc residues from chlorinated pulp	1.70
16.0 cc Na <sub>2</sub> S <sub>2</sub> O <sub>5</sub> reagent (pH 4.3)	1.70
2 cc starch solution	1.70
Back titration:	

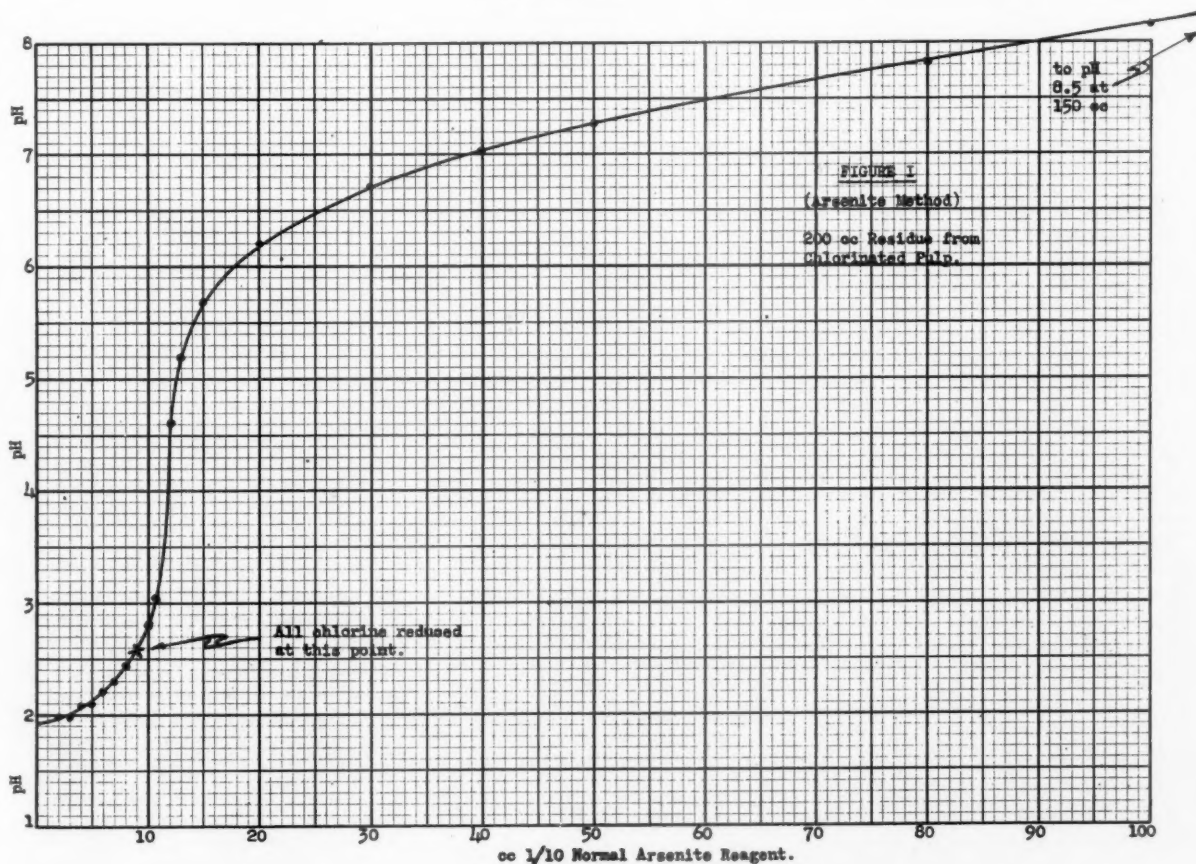
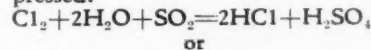
2.5 cc N/16 Iodine	1.68
7.4 cc N/16 Iodine (end-point)	1.68

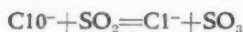
Thus the entire determination has been made without disturbing the pH of the solution.

● Although the Meta-Sodium Bisulphite reagent is not permanently stable, it can be treated as such when usage is for relatively short periods of time. If the reagent is pipetted from a stoppered bottle, the concentration will decrease approximately one per cent per day for about three days. After this the breakdown proceeds more rapidly and the reagent must be standardized on use. However, if precautions are taken to protect the reagent against oxygen, the concentration will change less than two per cent in ten days. (A simple protecting apparatus provides that air, replacing reagent drawn out of the bottle, be bubbled through pyrogallol).

#### Procedure

● The reactions involved in the Meta-Bisulphite method may be expressed:





A concentration of 1/16 normal is desirable for the reagent. The valence change for Meta-Sodium Bisulphite is four. Approximately 3.2 grams of  $\text{Na}_2\text{S}_2\text{O}_5$  will make up one liter of 1/16 normal reagent. Using a 100 cc portion of solution to be tested, an excess of reagent is added. This excess is back titrated with 1/16 normal Iodine. The available chlorine present will be represented by the volume of reagent used. Starch solution is used as indicator, and the end-point is very sharp and permanent.

The required solutions may be listed:

N/16  $\text{Na}_2\text{S}_2\text{O}_5$

N/16 Iodine

Starch indicator

The Meta-Sodium Bisulphite reagent is very readily standardized by titrating against standard Iodine reagent. In making a large number of determinations comparing the Meta-Bisulphite method with the Arsenite method for available chlorine in alkaline bleach solutions, it was found that there is a small increment of difference between the two methods. This increment is a constant, and of such small magnitude as to be of small practical importance. However, for exact work this characteristic can be overcome by standardizing the reagent against a bleach liquor of predetermined strength.

### Investigation of Method

● A comparison between the Meta-Bisulphite method and the Arsenite method was made: The samples are taken from the brown stock chlorinator, and values given represent pounds of available chlorine found in the solution of residues.

	30 min.	45 min.	60 min.
Arsenite .....	52	40	48
Meta-Bisulphite ....	50	34	25
Arsenite .....	62	48	56
Meta-Bisulphite ....	50	34	26

Chlorination under different conditions showed:

	Sample I	Sample II*	Sample III*
Arsenite .....	12.5	0	Negative 10
Meta-Bisulphite ..	18.7	13.7	2

\*Samples II and III showed an excess with KI starch.

In the Second Stage (High density treatment) the two methods check:

	1 hr.	2 hrs.	3 hrs.	4 hrs.
Arsenite .....	78.4	69.7	57.7	50.7
Meta-Bisulphite ..	79.5	70.9	58.9	50.7
pH .....	8.30	7.74	7.89	7.65

In the Third Stage (Low density treatment) the two methods check:

	Sample I	Sample II
Arsenite .....	36	38
Meta-Bisulphite ..	37	36

The second and third stage treatments are alkaline.

More recent investigations show that the Meta-Bisulphite method can be used to follow the bleaching of sulphate and other pulps. It is especially desirable when applied to the chlorination stage.

### Conclusions

● Meta-Sodium Bisulphite ( $\text{Na}_2\text{S}_2\text{O}_5$ ) is a satisfactory reagent for the determination of residual chlorine. It has several desirable characteristics:

1. Its pH characteristics make possible the determination of the chlorine present without disturbing the equilibrium conditions within a solution of residues.

2. It gives an excellent and permanent end point.

3. It is quite stable. By the use of a simple apparatus it can be kept stable for more than ten days.

4. It is readily prepared and standardized.

The Meta-Bisulphite method is, to the authors, the only known method which will accurately determine the residual chlorine in residues from chlorinated pulp.

### Bibliography

1. Determination of Available Chlorine in Hypochlorite Solutions by Direct Titration with  $\text{Na}_2\text{S}_2\text{O}_5$ .

V. A. Wilson, Ind. and Eng. Chem. Anal. Ed. 7:44-45 Jan. 15, '35.

2. Pontius (Modified) Method.

Donald T. Jackson and John L. Parsons, Paper Trade Journal August 13, 1936.

Original report on this method was made 10/26/37.

## Third TAPPI Dinner Held at Port Angeles

Two Papers by Mill Men Stimulate Discussion of Dirt and Testing Methods For Available Residual Chlorine

● The third of the Pacific Section of TAPPI's 1938-1939 series of seven dinner meetings, was held Tuesday evening January 10th at the Port Angeles Country Club, Port Angeles, Washington.

E. P. Cavanaugh, engineer of Fibre-board Products, Incorporated, made all arrangements as chairman of the meeting.

Approximately seventy men from the mills around Puget Sound, from St. Helens, Oregon and from Portland, attended and heard two papers.

The first paper outlined the development of an original method for determining the available residual chlorine in the chlorination stage and was titled, "The Meta-Bisulphite Method for the Determination of Residual Chlorine," by A. Orup and R. I. Thieme of the Soundview Pulp Company, Everett, Washington.

The second paper offered new approaches to combating that only enemy of quality wood pulp—dirt. R. M. Kuhn of the St. Regis Kraft Company, Tacoma, Washington, outlined the methods employed and the results obtained in their recent, "Investigation of the Sources and Characteristics of Dirt in Bleached Sulphate Pulp."

● N. W. Coster, chairman of the Pacific Section of TAPPI and technical director of the Soundview Pulp Company, served as chairman of the meeting. He announced that due to illness J. V. B. "Van" Cox, secretary-treasurer of the Pacific Section, had resigned and that he had appointed Fred Shaneman of Tacoma to complete Mr. Cox's term of office.

Mr. Cox is recovering from his illness,

but felt, Mr. Coster said, that upon returning to work his entire time would be taken up by his own duties as superintendent of the Paper Maker's Chemical Division of the Hercules Powder Company in Portland and, much to his regret, he would be unable to continue his TAPPI work. Mr. Coster said that TAPPI appreciated the excellent work done by Mr. Cox in the two terms he has served. The meeting gave a rising vote of thanks to Mr. Cox and wished him speedy recovery to good health.

It was announced by Chairman Coster that the Annual meeting of National TAPPI would be held in New York City from February 21-24th at the Hotel Roosevelt, and that the 1939 Fall Meeting would be held September 11-13th at Syracuse, New York.

The 1939 Fall Meeting, Mr. Coster

stated, will be a joint meeting with the Canadian Technical Association and the British Technical Society.

The two papers presented at Port Angeles were entered in the Shibley Award contest, Chairman Coster stated. He outlined briefly the purpose of the Shibley Award and the rules governing the papers submitted for the prize. The award, \$50, is to be made for the first time this year by the Pacific Section of TAPPI to the mill man presenting a paper before a TAPPI meeting on the Pacific Coast that is judged to be the best from the standpoint of technical excellence, presentation and reception by the audience. The award is named in memory of Kenneth Shibley, an active member of TAPPI who passed away in May, 1937. Mr. Shibley had suggested the idea of an annual award for the best paper presented annually at a Coast meeting.

In the name of the Pacific Section Chairman Coster welcomed back Wesley Osborne of the Hooker Electrochemical Company, who has recovered from the illness which kept him away from a number of recent meetings.

Following each paper there was a period of discussion participated in by a large number of those present.

Vice-chairman William T. Webster announced that the next Dinner Meeting would be held in Tacoma on Tuesday evening, February 7th, the time and the place and the program to be announced shortly.

On March 7th the Pacific Section will hold a Dinner Meeting in Camas, Washington, and on April 4th in Seattle. The seventh and last dinner meeting of the 1938-1939 series will be held in Vancouver, B. C., on Tuesday evening, May 2nd.

Following is a list of those who attended the Port Angeles meeting on January 10th:

● **Jerry Alcorn**, Pulp Division, Weyerhaeuser Timber Co., Everett; **William Anderson**, Eagle Metals Co., Seattle; **Ray C. Austin**, Washington Pulp & Paper Corp., Division of Crown Zellerbach Corp., Port Angeles; **C. Vernon Bassom**, Fibreboard Products, Inc., Port Angeles; **T. H. Beaune**, Fibreboard Products, Inc., Port Angeles; **C. H. Belvin**, Chromium Corp. of America, Portland.

● **A. F. Benson**, Fibreboard Products, Inc., Port Angeles; **Ray Brown**, St. Helens Pulp & Paper Co., St. Helens; **A. F. Brunson**, National Paper Products Co., Division of Crown Zellerbach Corp., Port Townsend; **Richard S. Buckley**, Pulp Division, Weyerhaeuser Timber Co., Everett; **Clarence D. Bunge**, National Paper Products Co., Division of Crown Zellerbach Corp., Port Townsend; **Everett A. Carlson**, Rayonier Incorporated, Port Angeles Division, Port Angeles.

● **O. S. Cauvel**, Washington Pulp & Paper Corp., Division of Crown Zellerbach Corp., Port Angeles; **E. J. Cavanaugh**, Fibreboard Products, Inc., Port Angeles; **H. Y. Charnell, Jr.**, Rayonier Incorporated, Port Angeles Division, Port Angeles; **Dick H. Cook**, Chase Brass & Copper Co., Seattle; **N. W. Coster**, Soundview Pulp Co., Everett; **Conrad Dyar**, Rayonier Incorporated, Port Angeles Division, Port Angeles.

● **E. F. Drake**, National Paper Products Co., Division of Crown Zellerbach Corp., Port Townsend; **Harold T. Fretz**,

Rayonier Incorporated, Port Angeles Division, Port Angeles; **William R. Gibson**, Northwest Filter Co., Seattle; **Howard C. Graham**, Washington Pulp & Paper Corp., Division of Crown Zellerbach Corp., Port Angeles; **H. M. Gustafson**, General Electric Co., Seattle; **D. V. Hamilton**, Pulp Division, Weyerhaeuser Timber Co., Everett.

● **S. H. Harrison**, Westinghouse Electric & Mfg. Co., Seattle; **William S. Hodgson**, Fibreboard Products, Inc., Port Angeles; **C. F. Holcomb**, Edison Storage Battery Supply Co., Seattle; **A. T. Hutchinson**, Westinghouse Electric & Mfg. Co., Seattle; **R. P. Hutchinson**, Rayonier Incorporated, Port Angeles Division, Port Angeles; **W. F. Hynes**, General Electric Co., Portland.

● **Ray Johnson**, Pulp Division, Weyerhaeuser Timber Co., Everett; **W. A. Kelly**, The Waterbury Felt Co., Portland; **B. L. Kerns**, Westinghouse Elec. & Mfg. Co., Seattle; **Frank G. Keuss**, St. Regis Kraft Co., Tacoma; **Glen King**, Washington Pulp & Paper Corp., Division of Crown Zellerbach Corp., Port Angeles; **Robert M. Kuhn**, St. Regis Kraft Co., Tacoma.

● **R. A. Lawrence**, Fibreboard Products Inc., Port Angeles; **A. H. Lloyd**, National Paper Products Co., Division of Crown Zellerbach Corp., Port Townsend; **Norman A. Lewthwaite**, National Paper Products Co., Division of Crown Zellerbach Corp., Port Townsend; **Ned Menzies**, The W. S. Tyler Co., Seattle; **Kyle M. Milligan**, Northwest Lead Co., Seattle; **Frank A. Morey**, National Paper Products Co., Division of Crown Zellerbach Corp., Port Townsend.

● **C. T. Mulledy**, Rayonier Incorporated, Port Angeles Division, Port Angeles; **E. E. Oleson**, Fibreboard Products, Inc., Port Angeles; **Adolf Orup**, Soundview Pulp Co., Everett; **W. M. Osborne**, Hooker Electrochemical Co., Tacoma; **Fred A. Radke**, Rayonier Incorporated, Port Angeles Division, Port Angeles.

● **W. H. Rambo**, Rayonier Incorporated, Port Angeles Division, Port Angeles; **James Ruck**, St. Regis Kraft Co., Tacoma; **J. E. Ryberg**, St. Helens Pulp &

Paper Co., St. Helens; **Walter A. Salmonson**, Coast Mfg. & Sales Co., Seattle; **Harlan Scott**, Pacific Pulp & Paper Industry, Seattle; **H. W. Seibert**, General Electric Co., Seattle.

● **Brian Shera**, Pennsylvania Salt Mfg. Co. of Washington, Tacoma; **E. C. Sherman**, National Paper Products Co., Division of Crown Zellerbach Corp., Port Townsend; **P. S. Simcoe**, National Paper Products Co., Division of Crown Zellerbach Corp., Port Townsend; **Lawrence K. Smith**, Pacific Pulp & Paper Industry, Seattle; **Henry Solbakken**, Rayonier Incorporated, Port Angeles Division, Port Angeles; **Philip E. Sullivan**, Ingersoll Rand Co., Seattle.

● **R. I. Thieme**, Soundview Pulp Co., Everett; **L. C. Van Arsdale**, Rayonier Incorporated, Port Angeles Division, Port Angeles; **J. V. Venables**, Washington Pulp & Paper Corp., Division of Crown Zellerbach Corp., Port Angeles; **R. V. Vognild**, Hooker Electrochemical Co., Tacoma; **Rolla W. Wallert**, Rayonier Incorporated, Port Angeles Division, Port Angeles.

● **William T. Webster**, St. Regis Kraft Co., Tacoma; **S. H. White**, City of Port Angeles, Port Angeles; **N. T. Widmann**, Rayonier Incorporated, Port Angeles Division, Port Angeles; **William Williamson**, Shuler & Benninghofen, Portland.

## Harter Celebrates Twenty-Five Years at Antioch

● December marked the twenty-fifth anniversary of George W. Harter as plant manager of the Antioch, California, mill of the Fibreboard Products, Incorporated.

Said the Antioch Ledger on December 23rd, "The mill had just been rebuilt after a severe fire when Mr. Harter was brought to this city from Chicago to preside over its destinies. He's still at it and going strong."

"Down at the Fibreboard plant the 650 regular employees refer to him affectionately as 'The Old Man' when he is out of earshot, and 'Mister Harter' when he's around. He rules the roost with an iron hand and all 650 of them love it."

## February Dinner Meeting In Tacoma, February 7th

The February Dinner Meeting of the Pacific Section of TAPPI will be held TUESDAY EVENING, FEBRUARY 7th, at the COLLEGE OF PUGET SOUND, 1500 North Warner, Tacoma, Washington. Time—6:30 p. m.

The program will feature **L. S. WILCOXON** of the Babcock & Wilcox Company, who will speak on "RECOVERY OF WASTE LIQUORS IN SULPHATE AND SULPHITE PULP MILLS"; and, **DR. KENNETH A. KOBE** of the Department of Chemical Engineering of the University of Washington, who will present a paper on "SPECIFIC HEATS AND BOILING TEMPERATURES OF SULPHATE AND SODA BLACK LIQUORS," prepared by himself and **ARVIN J. SORENSON**.

RESERVATIONS should be sent to **WILLIAM T. WEBSTER**, General Superintendent of the St. Regis Kraft Company, Tacoma, who, as Vice-Chairman of the Pacific Section, is in charge of the Tacoma meeting.



# Some Gas Cleaning Problems In Pulp and Paper Mills

by EVALD ANDERSON\*

MEMBERS of TAPPI and friends, I did not prepare any formal paper for tonight's talk, partly because my time was a bit short, but also because I did not know which of the topics I might discuss would interest you most. Instead, I thought that I would outline briefly certain problems which have interested me, and then try to answer any questions you may wish to ask about them, and discuss at greater length, if I can, those particular parts which to you seem the most important.

The title of the paper—if it were a paper — might be "Some Gas Cleaning Problems in Pulp and Paper Mills." The gas cleaning problems I have in mind are those in connection with recovery furnaces in kraft and soda mills, and the sulphur dioxide gas in sulphite mills; and also, odor elimination from digester and concentrator gases, in kraft mills.

Before discussing these gas cleaning problems, I think you may be interested in hearing about methods for determining solid and liquid impurities in gases. Most of you who are chemists or engineers are familiar with these methods, but I have sometimes had the impression that you do not ordinarily place the same faith in such measurements as you do, for example, in chemical analyses or heat balances.

● The ordinary method for these measurements is simple. You first measure the volume rate of the gases that carry the impurities or values, and then withdraw a small measured volume of this gas through a filter or absorber, which will retain the solid or liquid particles, and so determine the amount of such liquid or solids carried by unit volume.

In this way you find, for example, that the gas volume is, let us say, 10,000 c.f.m., and that it carries 454 milligrams of solid or liquid dispersoids per cubic foot, and that,

\*Technical Director, Western Precipitation Company, Los Angeles. Presented at a dinner meeting of the Pacific Section of TAPPI held in Portland, Oregon, October 4th, 1938.

therefore, these gases carry ten pounds of such solid or liquid material per minute.

Now, the question we ask ourselves is, naturally: How do we know that our measurement is correct? In a little paper I wrote for this section in 1929, I cited as evidence a case taken at random where our company's engineers made such measurements in a kraft mill, and found that there were 7½ tons per day of sodium sulphate in the stack gases. Afterward, this company installed a Cottrell Precipitator which actually collected 7 tons per day, while similar gas measurements indicated there was about 0.7 tons escaping. We knew of many other similar cases, but we, nevertheless, lacked direct proof.

For this reason we planned an experiment in our laboratory a few years ago. In this experiment, we forced air through a pipe system by means of a fan, and dispersed weighed amounts of dust into the air stream. We then measured the volume of the air and the dust concentration, and calculated how much dust was carried by the gas stream in a given time, and compared it with the weighed amount that we had dispersed into this stream.

We introduced the dust into so-called "dispersion fan" which served to disperse it evenly into a small volume of air. Next this dust-laden air was mixed with the air stream from the main fan. We then measured the velocity of this air stream with a Pitot tube, and withdrew a small sample of this dust-air mixture through a filter and gas meter. We then calculated how much dust was carried by the air-stream in a given period and compared it with the weight of dust that we had introduced. A single test usually lasted an hour, and in that time we ordinarily introduced about 10 pounds of dust into the air stream.

● The curve or graph in Figure I shows some of the results. We made several series of experiments at different velocities of gas in the pipe. Then we ran filtrations at

different sampling velocities. This graph shows four such tests where the main gas velocity was 66 feet per second.

The ordinates represent the ratio of the weight of dust we found to the weight of dust we introduced, and the abscissa are the ratios of the sampling velocity to the actual gas velocity in the pipe.

You will note that when this sampling velocity was about 5 per cent less than the gas velocity, we found exactly as much dust as we started with.

Details of these experiments are being published by the Institute of Chemical Engineers, so I shall say no more about them here, but it seems to me that these tests do show that it is possible to determine accurately by this method how much fume or mist furnace gases carry.

We have made a great number of tests like these in various plants and some of the results are shown in the following table. The figures represent the fume losses from sulphate or soda recovery furnaces, and were determined, for the most part, by methods like the one I have just discussed; although some represent collection data from Cottrell electrical precipitators. I have tabulated these results, under the heading of rotary and spray furnaces, and the spray furnaces include both the Wagner and Tomlinson types. The kraft mill losses are given as pound of  $\text{Na}_2\text{SO}_4$  per ton of pulp, even though the actual fume is nearly always a mixture of sulphate and carbonate. I have also added a column showing the gas volume in c.f.m. per ton daily pulp capacity. That is, 500 c.f.m. per ton-day means 50,000 c.f.m. for a 100-ton plant.

The letter K or S after the plant number represents kraft or soda mill. As we all know, the spray furnaces show considerably higher fume losses than do the rotary type.



# SODA AND SULPHATE LOSSES FROM RECOVERY FURNACES

Plant No.	Furnace Type	Fume Loss Lbs. per Ton	Gas Volume c.f.m. per ton-day	Gas Temp. °F.
1 K	Rotary	125	1700	200
2 K	Spray	140	500	250
3 K	Rotary	155	760	520
4 K	Spray	190	1500	250
5 S	Spray	110	440	175
6 S	Rotary	40	400	200
7 K	Spray	90	300	200
8 K	Spray-Rotary	90	680	400
9 K	Rotary	50	700	250
10 K	Spray	200	330	245
11 S	Spray	95	350	200
12 K	Rotary	60	600	200
13 K	Rotary	65	-----	-----

My associates and I have made tests on some standard scrubbers and found their average collection efficiency as low as 25 per cent, although considerably higher efficiencies than that have been secured in some plants. We also know of Cottrell precipitators operating on gases beyond standard scrubbers after spray furnaces, where about 100 pounds per ton of either soda or sulphate are collected.

Cottrell electrical precipitators have been used on both kraft mill and soda mill gases for many years, and outside of Europe there are now about six such installations in operation, and two more are being built.

Until recently the only factor involved here was economical recovery, and where the gas volumes per

● The data on gas volumes are also interesting because the cost of collection equipment is, roughly, proportional to the gas volume.

While on this subject, you may be interested in some figures from a plant survey at a Swedish Kraft Mill which were given to me on a visit there a few years ago. Here, they determined all losses, except the fume losses, which they got by difference.

## FUME COLLECTION

● There are, as you know, three feasible methods for collecting the fume from recovery furnace gases: electrical precipitation, washing and filtering. Some of you here probably have had more experience with the use of the last two methods than I. Filtration is very efficient, but involves the problem of clogging and corrosion of the filter material. For kraft mill gases, ordinary cloth filters would probably not last very long, although other material, such as glass cloth, might serve; and in the soda mills that I am familiar with, the gases occasionally carry tar, which, of course, tends to clog up the cloth.

Many are inclined to believe that properly designed and operated scrubbers should be very effective, but both sulphate and carbonate fume is difficult to collect by these means. The fume particles seem to be enclosed in an envelope of gas, which is difficult to penetrate. Wet kraft mill gases too, are rather corrosive so ordinary steel does not have a very long life.

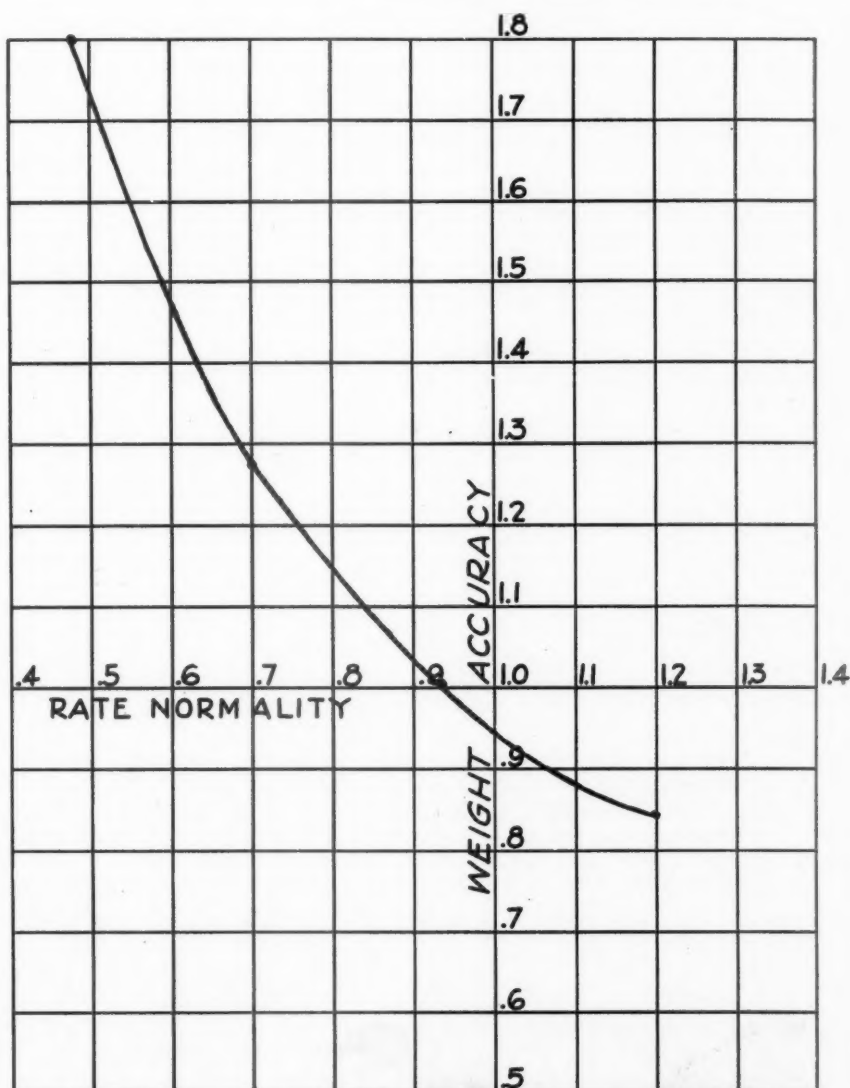


FIGURE 1

ton of pulp were large, or salt cake cheap, or the losses low, a precipitator installation often did not promise high enough return on the investment. For this reason, too, relatively low efficiency precipitators have often been installed, since these make for lower cost per ton of the collected fume.

But these days, we are also asked to consider the elimination of possible nuisance, and at least one installation is now being made with that in mind.

I have made up a table showing gas volumes and amount of recovered soda or sulphate, as well as collection efficiency from some operating Cottrell precipitators. This last does not include Longview, with which you are already familiar.

### SALT CAKE LOSSES FROM A SWEDISH KRAFT MILL WITH ROTARY FURNACE

Loss with pulp and wash water .....	130-175 lbs. per ton
Loss with lime and filtrate .....	25- 30 lbs. per ton
Miscellaneous losses .....	20 lbs. per ton
Losses with furnace gases, by difference .....	55- 75 lbs. per ton

TOTAL MAKE UP..... 230-300 lbs. per ton

### SODA AND SULPHATE COLLECTION IN COTTRELL ELECTRICAL PRECIPITATOR

Plant No.	Furnace Type	Gas Volume c.f.m.	Collection lbs. per ton	Col. Eff. %
1 K	S	90,000	100	88
2 K	S	22,000	100	90
3 S	S	22,000	85	90
4 S	S	13,000	90	98
5 S	S	26,000	35	95

### SODA AND SULPHATE LOSSES FROM RECOVERY FURNACES

PLANT NO.	FURNACE TYPE.	FUME LOSS #PER TON.	GAS VOL. CFM. PER TON DAY.	GAS TEMP. DEG. F.
1 K	ROTARY	125	1700	200
2 "	SPRAY	140	500	250
3 "	ROTARY	155	760	520
4 "	SPRAY	190	1500	250
5 S	SPRAY	110	440	175
6 "	ROTARY	40	400	200
7 K	SPRAY	90	300	200
8 "	SPRAY ROTARY	90	680	400
9 K	ROTARY	50	700	250
10 "	SPRAY	200	330	245
11 S	"	95	350	200
12 K	ROTARY	60	600	200
13 "	"	65	—	—

● As you may know, Cottrell precipitators for soda or sulphate fume collection may be designed to operate either wet or dry. In the wet method the gases are first cooled to near the dewpoint and the fume collected either into a film of solution on the electrodes, or as a semi-wet deposit which is washed off periodically. This method requires the smallest size precipitators and is particularly suitable in soda mills. But, in kraft mills we still have to contend with the corrosion problem when using this method.

In the dry method the fume is collected at temperatures above the dewpoint and is recovered as a dry powder. This is the usual method for kraft mills.

### CLEANING SO<sub>2</sub> GAS IN SULPHITE MILLS

● In Europe, where, as you know, pyrites is the ordinary source of SO<sub>2</sub>, the cleaning problem is always with them. The pyrites is usually roasted in multiple hearth furnaces which produce large quantities of dust. This dust is largely iron oxide and is a good catalyst for the oxidation of SO<sub>2</sub> to SO<sub>3</sub>, so that as much as 13 per cent of the sulphur in the gas may be present as the trioxide. In the old type of sulphite plants, they usually had settling chambers to remove some of the dust, and then scrubbers, but the final cleaning was often done with coke filters.

This purification system was quite effective on the dust, but not on the SO<sub>3</sub>. For example, in one Swedish plant that I visited, they had 5.8 per cent of the total sulphur as SO<sub>3</sub>.

## SODA & SULPHATE COLLECTION IN COTTRELL ELECTRICAL PRECIPITATOR

PLANT NO.	FURNACE TYPE	GAS VOLUME C. f. m.	COLL. # per Ton.	COLLECTION EFFICIENCY
1 K	S	90,000	100	88%
2 K	"	22,000	100	90
3 S	"	22,000	85	90
4 S	"	13,000	90	98
5 S	"	26,000	35	95

FIGURE 3

ahead of the washing system, and 2.9 per cent after these filters.

In a similar plant in Norway there was about 2 per cent of the sulphur as  $SO_3$  after their washers.

In this particular plant they had just installed two stage Cottrell precipitators, at the time of my visit. The first stage operated at about  $360^\circ C$ . to remove the dust. The gas was then cooled by external coolers and sprays to  $35^\circ C$ . and passed through the second precipitator. This removed over 95 per cent of the  $SO_3$ , so that the final gas carried virtually no dust and very little  $SO_3$ .

Where sulphur, rather than pyrites is the source of  $SO_2$ , as here in America, we have a different problem. There is then no finely divided iron oxide to catalyze the  $SO_3$  reaction, and instead of having from 5 to 13 per cent of the sulphur as  $SO_3$ , Sutermeister claims there is here usually no more than 1 or 3 per cent.

● Such small quantities of  $SO_3$  in the acid gases are ordinarily not of enough economic importance to justify expensive purifying means. But it has seemed possible that even these small quantities of  $SO_3$  might be harmful because of the gypsum formation, and also that there might, at times, be appreciable quantities of volatilized unburned sulphur that would be harmful, and would be removed with the  $SO_3$  by a Cottrell precipitator. Then, too, even these small quantities of  $SO_3$

cause an appreciable plume of acid mist at the Jenssen Tower exit, since this mist is not readily collected in the towers.

Fortunately, we have now the opportunity of finding out just how important these matters are, since there now is a precipitator in operation on such gases. However, I shall leave the discussion of the operation of this installation to those of you who are actually operating these installations.

### ODOR ELIMINATION

● In discussing the odor problem in pulp mills, I shall not have much to say about the formation occurrence and nature of the odorous compounds. For here, about all I know is what I have read in books, and many of you here are thoroughly familiar with that part of the problem.

According to the literature, two of the most important odoriferous compounds are methyl mercaptan and methyl sulphide. In some plants, they have, apparently, found as much as 2 pounds of mercaptan and 6 pounds of the sulphide per ton of pulp in the digester gases. One author, Klason, I believe, also found about  $\frac{1}{2}$  pound of mercaptan per ton of pulp in the recovery furnace gases.

I am assuming, however, that by proper technique, the major part of these substances can be confined to vent gases from digesters and evapo-

rators, and that if these vent gases are adequately deodorized, the problem can be considered as solved.

The problem here is probably similar to what they have in fish reduction plants and sewage treatment plants, to mention just two, even though the smell and the nature of the compounds may differ. The odor is here destroyed by oxidizing the compounds, and this they have tried to do at ordinary temperatures by ozone and chlorine; and at high temperatures, by air.

Ozone has here not proven very effective, and seems only to temporarily mask the odor. Chlorine seems to be effective, but in some cases, at least, they find it difficult to provide the right dosage; and too much chlorine is nearly as bad as the odor itself.

● Oxidation by air at high temperatures seems always to be effective. With fish and sewage odor, 1200 to  $1400^\circ F$ . is high enough, and I am inclined to believe that in the right apparatus this temperature will do for digester odors too, although most of the authorities seem to favor  $2000^\circ F$ .

Where fuel consumption is no object, or where the heat in the combustion gases can be utilized in other equipment, any fire box should serve as a deodorizer. But, if the fuel consumption is to be kept at a minimum, some regeneration scheme has to be used. A few years

ago, Dr. F. G. Cottrell and his associate, Dr. Royster, developed a heat interchanger where they used a bed of pebbles as the exchange medium. Later, Dr. Cottrell adapted this to deodorization by using two such heat exchange beds in series.

The first one of these units was built at the Pasadena sewage treatment plant a few years ago, and has operated in an exceptionally fine manner. The appended outline sketch of this unit might help to show how it operates.

The cool, odorous gases enter at the bottom of one of the beds at about 150° F.; when they have passed through to the top, their temperature has gone to about 1200° F. Here they add a very small amount of heat from a gas flame, and the hot gas then passes down through the second bed, and gives up most of the heat, so that they escape at about 200° F. After a given period, usually about 30 minutes, the direction of flow is reversed.

In this case the gases carry enough air to support combustion in the open space, so long as the temperature does not fall below 900° F., but oxidation probably begins before that when the gases are in contact with the pebble surface.

● At any rate, the exit gas has absolutely no odor.

At this particular plant, they treat about 10,000 c.f.m. of sewage dryer gas, and have an automatic record of the inlet and outlet temperatures. I have made up a large scale graph from one of their recent records so you may see how effective their apparatus is. The regular record only gives the inlet and outlet temperatures, but I made readings of the maximum temperature above the pebbles for 30 minutes, and I have added these readings to the graph.

As you see, the average inlet temperature was about 150° F., and the outlet temperature about 190° or 200°, while the average temperature in the top of the deodorizer was about 1210° F.

The only heat used up in the process was that needed for the 50° temperature rise and for radiation losses, and this was supplied by burning about 750 c.f. of natural gas per hour. At 1100 BTU per cubic foot this carries only little more heat than that needed for the net temperature rise.

I believe this apparatus might be used to advantage for deodorizing digester gases although if 2000° F. is required, it may be necessary to

use some special material for the pebble bed.

### Canadian Newsprint Developments

● Powell River Company and Pacific Mills, Ltd., the west coast's chief newsprint producers, undergo proration only on a voluntary basis and are not bound by the recent restrictions imposed on the industry in the east. Powell River is now operating at about 60 per cent of capacity, and approximately the same holds true of Pacific Mills at Ocean Falls.

But Eastern mills have been fighting over the allocation of a 20,000-ton order to the Great Lakes Paper Company by the Milwaukee Journal. Under the terms of a compromise settlement, Great Lakes must split the tonnage among other mills during the current year.

Milwaukee Journal had previously bought its paper from Abitibi Power & Paper Company, but the contract expired at the end of 1938 and Great Lakes landed the new order. This transpired when J. H. Carlisle was president of Great Lakes. As the company was then running at a rate of capacity greater than the average for the industry, when the Ontario government ordered it to conform with the prorating agreements it was obvious that Great Lakes could not conform while at the same time taking on the Milwaukee order.

The Milwaukee Journal, notified that Great Lakes could not handle the business, began negotiating with an important European producer. About this

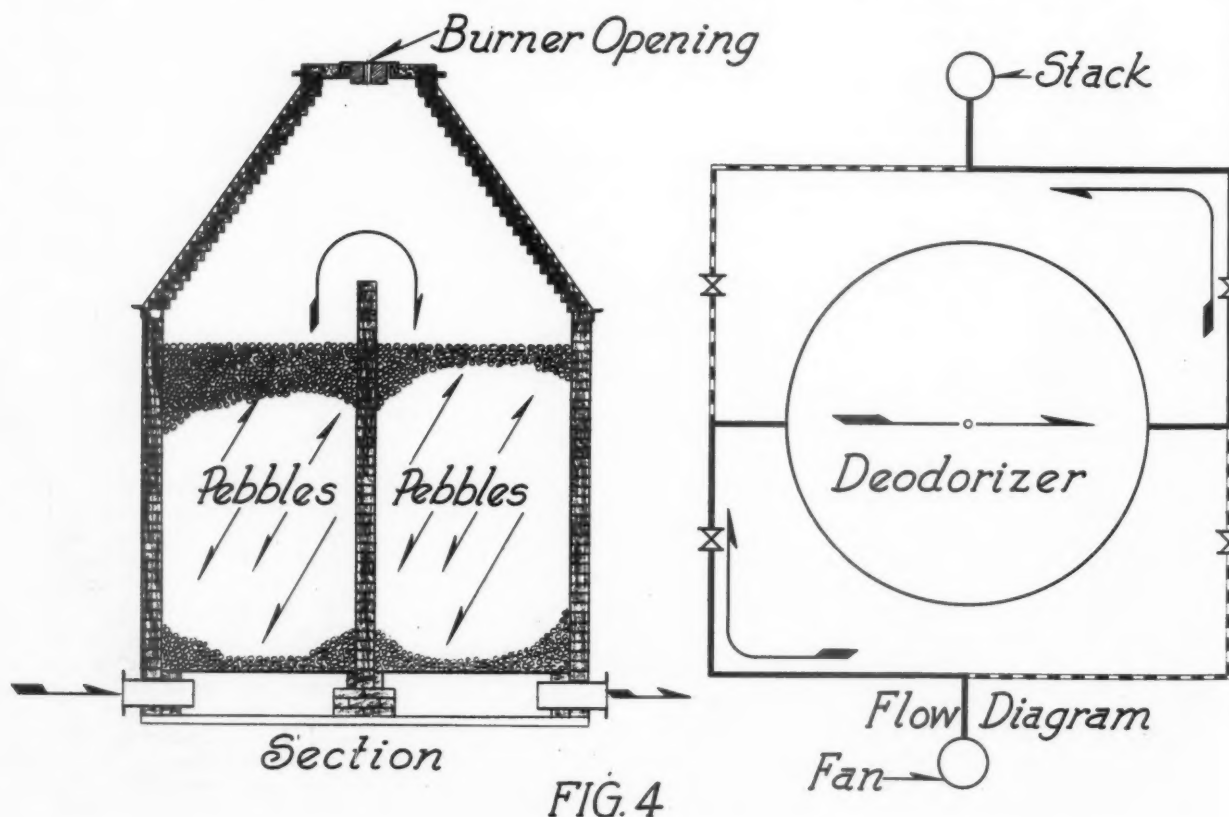


FIG. 4



time Carlisle, unable to agree with fellow directors regarding the prorating schedule, resigned and was succeeded by Earl Rowe, who immediately negotiated with the Ontario government with the result that the Milwaukee order was again placed in Canada, but re-allocated to several mills.

The contract originally negotiated was almost identical to that previously given Great Lakes. The understanding was that the Milwaukee paper would share in any dividends to be paid on the Class B preference shares of Great Lakes as would its other customers. But now a new contract has been completed, to run for eight years and beginning with 1939. The same clause regarding dividend distribution remains and several mills will share the tonnage this year, but at the expiration of 1939 there may be a re-allocation depending on conditions in the industry.

### Clark Everest Elected President of Marathon

● D. Clark Everest, who is serving his second term as president of the American Paper & Pulp Association, was recently elected president of the Marathon Paper Mills Company of Rothschild, Ashland and Menasha, Wisconsin. He has been vice-president and general manager of the company for a number of years. Mr. Everest succeeds C. C. Yawkey, who was elected to the newly created position of chairman of the board.

Mr. Everest is also vice-president of the Longview Fibre Company of Longview, Washington, of which H. L. Wollenberg of San Francisco is president and R. S. Wertheimer is secretary-treasurer and resident manager.

### Canadian Pulp Exports Down 37% in Eleven Months

● Exports of wood pulp from Canada declined sharply last year. During the first 11 months of 1938 exportations of all classes of pulp, including mechanical and chemical, from Canada, reached a total of 504,319 short tons, valued at \$25,395,578, according to figures compiled from statistics issued by the Dominion Bureau of Statistics. These exports represented a drop of 302,006 tons, or 37.4 per cent, in volume, and \$13,059,860, or 33.9 per cent, in value, compared with a total of \$38,455,438 exported in the corresponding period of 1937.

### Oregon Sets Up Sanitary Authority

● Before retiring from office, Governor Martin of Oregon appointed three members of the Sanitary Authority authorized under the Stream Purification Bill approved by voters of the state last November. One was selected from each congressional district.

Representing the Multnomah County district is Dr. Richard B. Dillehunt, head of the Medical School of the University of Oregon, and outstanding state leader in the medical profession. Blaine Hallack, lawyer of Baker, in eastern Oregon, represents that area. Albert Burch of Medford, mining industry leader, was chosen for the western Oregon district.

The bill designated three other members, Dr. Frederick D. Stricker, state

health officer; Charles E. Stricklin, state engineer, and John C. Veatch, chairman of the State Fish Commission.

To date, no definite action toward formation of regulations for stream purification has been taken. Carl Green of the State Board of Health has prepared a brief of all state statutes pertaining to pollution control, and has sent copies to each member of the Sanitary Authority. It is expected that a meeting will be held soon to discuss preliminary steps.

In the meantime, however, no funds are available to carry on the work, since the bill carried no appropriation. The state legislature, which convened January 9, will be asked to appropriate funds to meet a budget which will be submitted to that body.

### Wollenberg Visits Longview Fibre Plant

● Harry L. Wollenberg, president of the Longview Fibre Co., attended conferences at the Longview mill the week of January 8. Mr. Wollenberg makes his headquarters in San Francisco.

### Three More Milk Bottle Machines

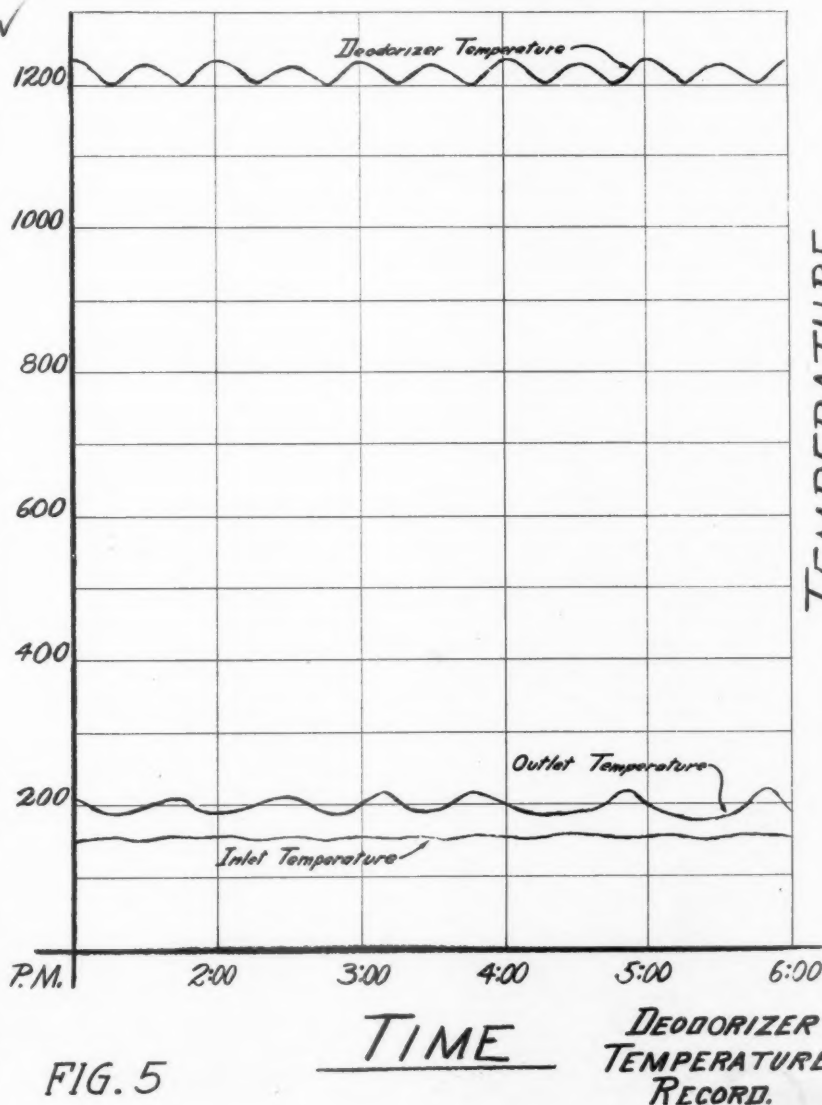
● With the installation of three new Pure-Pak paper milk bottling machines last month in California milk products plants, the consumption of milk in these pure bleached sulphite board containers will reach the total of 600,000 containers per week in California and Washington.

This was the statement made by D. B. Malkson, western representative, Pure-Pak Division, Ex-Cell-O Corporation last month.

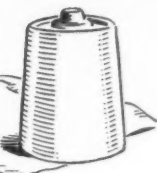
Two new Pure-Pak machines went into the plant of the Lucerne Cream & Butter Co. (Safeway), Oakland, and an additional machine was installed at the Los Angeles plant of the same company, last month.

### Hartnagle East For Fibreboard

● Nelson Hartnagle, chief chemist of Fibreboard Products, Incorporated of Port Angeles, Washington, left early in January on a three weeks business trip in the East in the interests of Fibreboard.



# Rayon *and other* CHEMICAL USES OF WOOD PULP



## Rayon Pulp Price Reduced for 1939

● During November the announcement was made by the American and Canadian producers of dissolving pulps that the base price of rayon grade bleached sulphite pulp for 1939 delivery had been reduced from \$85 to \$80 per ton. The \$85 price was in effect from May through December, 1938.

Commenting upon the price reduction the Rayon Organon said: "This action on the part of the pulp producers in lowering their prices will undoubtedly be of some assistance to the rayon producers in helping to keep production costs low. At the same time, this new pulp price is still 10 per cent above the depression low price of \$72.50 per ton."

## Viscose Announces Two New Yarns

● The American Viscose Corporation announced two new yarns in November. The first, an abraded filament acetate process yarn said to have unusually high covering power and to produce an exceptionally satisfactory worsted effect.

The second new yarn is a viscose process product for hosiery which is expected to be commercially available shortly. It is a sheer yarn and it is reported to have greater elasticity and strength than any viscose yarn now on the market. It will be so priced as to permit a line of hosiery selling in the moderate price field.

## Canada's Rayon Pulp Production in 1937

● According to data released in London by the high commissioner for Canada, the Dominion produced approximately 180,000 tons of rayon grade wood pulp in 1937, or 20 per cent of the estimated world production of 900,000 tons. More than 90 per cent of this production was exported from Canada at prices ranging from \$75 to \$95 per ton.

At the present time three Canadian mills with a combined capacity of 200,000 tons annually are making rayon pulp. Canada has one viscose yarn spinning plant and one plant producing Cellophane.

## Introduce All-Rayon Rugs In the U. S. A.

● The first 9x12-foot all rayon rugs have been introduced in New York by an importer bringing them in from Italy. They are retailing at around \$50, weight 57 pounds and have a pile length of around three-quarters of an inch. They are offered in a range of ten oriental patterns.

The report, appearing in the Rayon Textile Monthly, goes on to say that rug manufacturers in this country are carrying on experimental work with all rayon rugs, and that samples are circulating throughout the country.

## Germany Develops Viscose Staple Fiber Stronger Than Cotton

● I. G. Farbenindustries A. G. of Frankfort, Germany, has recently announced the perfection of a new Vistra viscose staple fiber which is 60 per cent stronger than middlin grade American cotton when dry and about 25 per cent stronger when wet. I. G. believes that all of the drawbacks of viscose staple fiber have now been overcome.

## German Staple Fiber Production Exceeds Filament Rayon

● Staple fiber production in Germany which amounted to only 5,400 metric tons in 1933, rose to 46,000 in 1936, to 102,000 in 1937, and in 1938 is expected to reach 150,000 to 160,000 metric tons, according to the trade press. Measured by volume, production of staple fiber surpasses rayon output in Germany. Rayon production for 1938 is expected to approximate 65,000 metric tons, having risen from about 28,700 in 1933. The production of the Austrian rayon plant at St. Poelten is included in the production estimate for 1938. A recent press report stated that domestic production of spinning fibers of all kinds in Germany now represents about 33 per cent of the country's requirements of such raw materials, compared with 9 per cent in 1933.

A school to develop special spinning methods and spinning machinery for staple fiber has been erected at Denkerdorf in Wurttemberg, at the request of the commissar of the 4-year plan. Studies to determine the best method of twisting staple fiber yarns also are to be made, according to press reports. (American Consulate, Dresden, and American Consulate General, Frankfort-on-Main.)

## Hosiery Makers Worry About New Yarns

● The Textile World reports that "Hosiery manufacturers who have worried unduly as to the immediate implications of the new synthetic yarns, are reassured in a statement made by the National Association of Hosiery Manufacturers. The association emphasizes that 'Whatever place the new yarns may occupy in hosiery making, they will have to attain that position over a period of time; there will be no over night transition.'"

## Bundy Visits Fibreboard Headquarters

● Robert Bundy, manager of the Fibreboard Products, Incorporated, sulphite pulp, paper and board mill at Port Angeles, Washington, left early in January for several weeks visit to the company's headquarters in San Francisco, and to the several Fibreboard mills in California.

## News of the Deep River Project

● Plans for the establishment of a 200 ton rayon pulp mill by Deep River Development Company at Menzies Bay, on the northeast coast of Vancouver Island, are well advanced, according to Valentine Quinn, of Northern Construction Company, one of the chief backers of the enterprise, but they have not reached the point where any estimate can be made of the time for actual construction.

"Obtaining waterpower is no longer a difficulty," Mr. Quinn told Pacific Pulp & Paper Industry. "Our right to waterpower at Campbell River has been satisfactorily established, and while British Columbia Power Corporation has long held a reserve on the hydro-electric resources of that watershed, an arrangement has been made whereby the interests of all will be amply safeguarded."

Mr. Quinn said that it had been necessary to restake the Campbell River waterpower area, however, and that this had taken considerable time. According to Mr. Quinn, the 200 ton mill would be only the first unit of a plant which ultimately would produce at least 500 tons of rayon pulp a day. Campbell River is close to one of the richest timber sections of British Columbia, and Menzies Bay has been used for some years as the principal booming grounds for Comox Logging Company and other large timber operators.

Meanwhile other pulp schemes for British Columbia appear to be at a standstill, although a cessation of war in the Orient would probably lead to a renewal of activity in that line. Frank Buckley, of Vancouver, has not abandoned hope of establishing a large mill at Prince Rupert, and several other projects have been discussed, notably one involving A. E. McMaster, formerly general manager and vice-president of Powell River Company, who is negotiating with British interests.

Reported deals with German capitalists for the building of a mill in Burrard Inlet have apparently fallen through, as there is no disposition on the part of Canadian business men or governments to negotiate with German representatives under present political and economic conditions.

Spokesmen for Bloedel, Stewart & Welch, one of British Columbia's largest timber owners and logging operators, continue to deny that their company is interested in a pulp or paper scheme.

## Sherman Stepped Up In Union Organization

● John Sherman of Port Angeles, was recently advanced to be sixth vice-president of the International Brotherhood of Pulp, Sulphite & Paper Mill Workers at a meeting of the union's executive board in Fort Edwards, New York. Mr. Sherman has been seventh vice-president for several years.

## Dr. Lewis to Visit Coast Mills

● Dr. Harry Lewis, dean of the Institute of Paper Chemistry at Appleton, Wisconsin, is due to be at Reed College, Portland, on February 1, and will visit some of the northwest mills while on his annual trip to the Coast.

Westbrook Steele, executive secretary of the institute, arrived on the Coast early in January, stopping first in San Francisco.

## Puget Sound Completes New Office Building

● In December the Puget Sound Pulp & Timber Company completed its new office building at the plant in Bellingham and moved in. The building, of colonial design, is fifty feet square and has eleven offices including private offices and general accounting rooms. On the second floor space has been provided for auditors and government inspectors.

## Fred Shaneman Named TAPPI Secretary

● N. W. Coster, chairman of the Pacific Section of TAPPI, recently announced the appointment of Fred Shaneman of Tacoma as secretary-treasurer of the Pacific Section to complete the unexpired term of J. V. B. "Van" Cox of Portland who has been seriously ill.

Fortunately, Mr. Cox is now on the way to full recovery, but he submitted his resignation to Chairman Coster as he felt his regular duties as superintendent of the Paper Makers Chemical Division of the Hercules Powder Company would require all of his time and energy. At the time Mr. Coster announced Mr. Cox's resignation at the Port Angeles dinner meeting, January 10th, the members gave a rising vote of thanks to Mr. Cox for his efficient work as secretary-treasurer for almost two terms and expressed their sincere wishes for his complete recovery.

Mr. Shaneman, a member of TAPPI, is manager of the Pennsylvania Salt Manufacturing Company of Washington, producers of liquid chlorine and caustic soda with a plant in Tacoma.



**FRED SHANEMAN**  
TAPPI'S Secretary-Treasurer

## Is Japan Permanently Changing Her Buying Methods?

● One of the prospects that British Columbia pulp and paper men prefer to leave for action on a when-and-if basis is that when conditions in the Far East become more or less reestablished on a normal level again, the exports to that market will be exclusively through Japanese hands.

Representatives of the pulp and paper industry had a foretaste of the methods that may later be applied to it when they learned this month that all the lumber shipments from the Pacific Northwest are to be routed through all-Japanese channels under the general direction of Mitsui, Mitsubishi, S. Tamura and one other Japanese import and export house with operations centered in Vancouver.

These companies comprise the newly organized American Importers Association with a capital of 52,000,000 yen. It is understood that the organization has the official backing of Tokio and that it will be the only one authorized to obtain Japanese credits for the handling of logs and lumber from the Pacific Northwest. It is understood that the new scheme has met with considerable hostility in Japan from the smaller companies excluded from the monopoly, but with the government determined to be ruthless if necessary in placing business only with the most strongly entrenched companies their protest is not likely to accomplish important results.

Whether the Northwest exporters, American and Canadian, will take effective steps to combat the new export set-up remains to be seen. Unquestionably it will lead ultimately to the disappearance of Occidental log and lumber brokerage houses just as it has already eliminated from the picture many Occidental commercial intermediaries dealing with other commodities such as peanut oil. In British Columbia such important trading organizations as H. R. MacMillan Export Company, Seaboard Sales, American Trading Company and several shipping lines are directly affected.

Developments of the next few months will show whether these exporters are prepared to wield the big stick and refuse to accept Japanese dictation on the ground that, after all, if Japan wants the lumber and logs it must accept it on the sellers' terms or whether, in the interests of harmony and a desire to share in returning trade with the Orient they consider it good business to play according to Nipponese rules.

● Vancouver lumber exporters hope to be able to retain at least a small proportion of the business formerly done, but with Tokio favoring the new combine they do not expect to make much progress.

"It is just one more sign of Japanese commercial policy to gain control over as many stages of commodity supply as possible. The ultimate objective is the point of production," one lumber exporter told Pacific Pulp & Paper Industry. "Japanese are trying more and more to buy logs instead of lumber. Recently they have been buying large quantities of hemlock logs, and within the last few months at least six cargoes sailed from British Columbia ports for the mills of Japan. A large proportion of this business represented logs cut by

Japanese labor, boomed by Japanese and loaded on Japanese ships. From the Japanese standpoint that is obviously the ideal setup, but from the standpoint of a young country that must depend on its natural resources for future wealth it simply doesn't make sense. The only revenue from the transaction is stumpage dues and taxes on the timber leases—a negligible amount when compared to the possible income to white loggers, while sawmill hands, white booming and loading crews and Canadian and American owned ships."

So far, the Canadian government has taken a passive attitude on the subject, the argument being that Canadian timber owners are not compelled to sell to the Japanese and that if they wish to do so they should be prepared to do it on the terms set by the buyers.

Meanwhile Canadian tugboat operators fear another form of Japanese competition. Under a new order adopted at Ottawa by the Canadian government fish packers are authorized to tow scows and do other hauling jobs for canneries and fish plants. It is feared that the Japanese will apply this ruling to log transport and insist that in the towage of Japanese-owned logs only Japanese vessels, of which there is a considerable number in B. C. waters, be employed.

## Fir-Tex to Make Asphalt Coated Board

● The Fir-Tex Insulating Board Company is installing an asphalt coating unit, made by the Hesse-Ersted Iron Works of Portland, which will be used for coating sheathing board. In addition to the asphalt, the machine will coat the surface with a new substance to prevent it from being tacky. Installation is scheduled to be completed by January 20.

The St. Helens, Oregon, plant is also adding a third rotary suction box on the fourdrinier, according to manager R. W. Simmeral. It will be in place about February 1st.

The Fir-Tex mill started 1939 with operations at full capacity.

## Grinder Intake Being Rebuilt

● The forebay, or intake to the water grinders, is being rebuilt for the Crown Willamette mill at Camas, and existing equipment replaced. The intake construction is based on a new design. Settling basins have been installed since the original construction.

This was the original power development of the mill, bringing water from a string of lakes. It furnishes a good part of the water requirements for the mill, and during the winter provides power for several grinders.

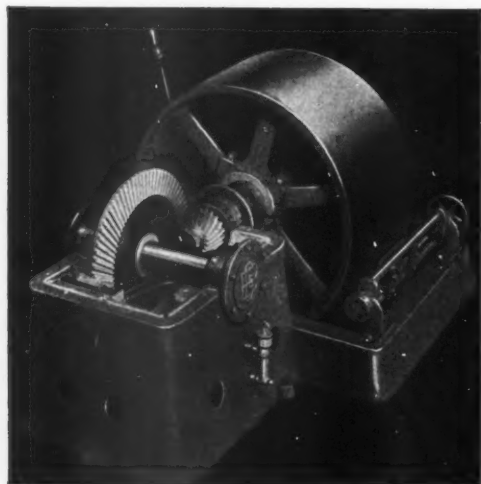
## Death Takes Three Veterans of Camas Mill

● Three veteran employees of the Crown Willamette mill at Camas, Washington, passed away last month. George Anderson, who had been machine tender on No. 10 machine, and who had been at the mill for 20 years, died in December. Another was E. A. Hodge, back tender on No. 6 paper machine, another 20-year man. The third was C. H. Starks, screen tender in the sulphite mill, who had been here for 15 years.





### What a Tribute to Modern Engineering!



Did you ever stop to think about the work Capt. Eyston did before he drove his speed monster 357 miles an hour? Spectacular as it was, his dash across Utah's salt flats last August tenth was but the fitting climax to months of designing, building, and testing.

It is the same way with the performance of Black-Clawson and Shartle paper mill machinery. Back of its characteristic high efficiency lie thousands of hours spent in field research, drafting room, and laboratory. It also is a tribute to modern engineering.

Put the benefit of Black-Clawson-Shartle engineering to work in your mill. Ask for information about the particular B-C-S equipment in which you are interested. The Black-Clawson Co., Hamilton, O. Owners of Shartle Bros., Middletown, O.

**BLACK-CLAWSON**



**SHARTLE BROS.**



## Swedish Pulp Exports Decline Half Million Tons

● For the first ten months of 1938 exports of chemical wood pulp from Sweden declined 508,00 tons, according to official figures published in the Swedish Paper Journal. The ten month's exports were 1,290,126 tons against 1,792,636 tons in the same 1937 period, and 1,516,202 tons in the comparable 1936 period.

From the 1937 ten months export figures bleached sulphite has dropped 86,000 tons, unbleached sulphite 188,000 tons and unbleached sulphate 234,000 tons.

Exports of bleached sulphate pulp have exceeded by 6,000 tons the exports in the first ten months of 1937.

On December 7th the sales contracts of Swedish sulphite pulp for 1939 amounted to around 65 per cent of the anticipated 1939 production while contracts for sulphate pulp for 1939 were about 60 per cent of anticipated production. The Swedish Paper Journal adds, however, that the production of sulphite will be reduced through an international decision for 1939 as well as for 1938. Hence, the sales at present may be greater than 65 per cent of what production later materializes after the Sulphite Pulp Supplier's cartel curtails the output.

Apparently the greater part of the contracts made for Swedish pulp for 1939 are the result of "marrying" or converting 1938 high priced contracts, whereby the pulp seller reduces the 1938 contracted price in consideration for a 1939 contract.

## Domsjo Completes Bleached Plant

● At the Hornefors sulphite mill of the Mo & Domsjo Company the modern bleaching plant, the plans of which were announced earlier, has now been completed. It is capable of bleaching the whole output of the mill, about 45,000 tons a year. Work at this plant was begun some weeks ago, and is now in full swing. The equipment has been supplied mainly by Gebrüder Bellmer, Karlstads Mekaniska Werkstad, and Hedemora Verkstad.

Some alterations have been made in the Domsjo sulphite mill this year with a view further to improve the rayon pulp produced at the mill. The Mo & Domsjo is also, in accordance with its earlier announced plan, enlarging the alkali and chlorine works at Domsjo from its present capacity of 3,000 tons p. a. to 5,000 tons of chlorine and 5,500 tons of alkali a year. Equipment for condensing the chlorine gas into liquid, for use in the Hornefors mill and elsewhere, has been installed.

## Camas Christmas Party Well Attended

● The Crown Willamette annual Christmas party was held December 23 at the Orchard Hills golf club, near Camas, with about 150 present. They represented the foremen's club, the laboratory and the office.

Edgar Darrington of the printing department in the bag factory, was Santa Claus, and presided at the exchange of gifts. Music was furnished by Lyle Tidland's orchestra, composed of musicians within the mill organization.

## Cooper and Wood Ill—Van Arnam Recuperating

● E. W. G. Cooper, assistant paper mill superintendent of the Crown Willamette mill at Camas, has been ill for the past few weeks, and is still confined in St. Joseph's hospital, Vancouver, Washington.

A. D. "Dad" Wood, sulphite pulp mill supervisor at Camas, has also been ill, confined to his home with influenza. He was recovering at the time of writing, but was still missed at the mill.

W. J. Van Arnam, Camas office manager, who was threatened with pneumonia for several weeks, is getting along fine now, has been visiting at the mill occasionally, and hopes to be back on the job soon.

## Census Shows Paper Industry's Growth

● A slight increase in employment and considerable increase in wages and value of products in the paper industry for 1937 as compared with 1935 are shown in the preliminary figures compiled from returns of the recent Biennial Census of Manufacturers, released December 30th, 1938, by Director William L. Austin, Bureau of the Census, Department of Commerce.

The number of wage earners increased 7.2 per cent, from 103,344 in 1935, to 110,809 in 1937, while their wages increased 28.9 per cent, from \$110,200,308 to \$142,079,857. The value of products increased 34.6 per cent, from \$711,793,299 to \$957,939,764.

The production of paper and paper board in 1937 amounted to 12,837,003 tons, valued at \$895,439,687, f. o. b. factory prices—increases of 22.5 per cent in quantity and 36.5 per cent in value as compared with 10,479,095 tons, valued at \$656,115,565 for 1935.

This industry, as classified for census purposes, embraces establishments engaged primarily in the manufacture of paper and paper board.

Production of news print paper was 960,663 short tons in 1937, against 947,717 tons in 1935, the report shows, while production of book paper totaled 1,561,074 tons, against 1,281,870 tons; of writing paper, 578,147 tons, against 507,325 tons; of wrapping paper, 2,053,387 tons, against 1,632,054 tons; of tissue paper, 540,152 tons, against 473,214 tons of building paper, 608,086 tons, against 440,704 tons, and of paper board 5,802,036 tons, against 4,695,890 tons.

## Radtke Recovers From Accident

● L. M. Radtke, assistant chemist in the laboratory of the St. Helens Pulp & Paper Co., is back on the job at the mill, following several months convalescence from injuries sustained in a fall. He is still on crutches, but is now able to attend his duties.

Max Oberdorfer, Jr., who filled in while he was absent, has now left the St. Helens organization.

## Hughes Visits In California

● J. T. Hughes, Portland office manager for the Crown Zellerbach Corporation, spent the Christmas holidays on a vacation trip in California and visiting in San Francisco.

## Lee of Powell River Promoted

● Elmer C. Lee, for several years assistant to the president of Powell River Company and one of the best known newsprint executives in British Columbia, has been appointed president and general manager of the Virginia Dock & Trading Company, Seattle, one of the Brooks-Scanlon enterprises of which Powell River is an associate.

Mr. Lee is now in California with President S. D. Brooks of the Powell River Company and on his return to the Northwest will assume his new duties at Seattle. His service with the newsprint company ended December 31 officially and many of those who greeted Elmer on Christmas eve when he presided over the company's Tom and Jerry bowl, as he has in traditional style for many years, little realized that he would soon be ending his permanent residence in Vancouver.

Mr. Lee joined the Powell River Company in 1923 as private secretary to A. E. McMaster, then general manager of the company. He was Iowa born and came west with the old Whalen Pulp & Paper Company. However, he moved over to Powell River with Mr. McMaster before the reorganization. Mr. McMaster had previously been treasurer of the Whalen organization, which had mills at Port Alice, Woodfibre and Swanson Bay.

His Vancouver activities included a directorship in the Terminal City Club and membership in the Point Grey Golf & Country Club.

## Chase Bag Plant To Be Ready March 1st

● The new Portland, Oregon, plant of the Chase Bag Company, nationally known manufacturers of numerous types of bags, is nearing completion at N. W. 26th and Nicolai streets, and is expected to be in operation about March 1st.

The factory will produce burlap and cotton bags, and open mesh paper bags. It is planned that paper for the latter will be purchased from Pacific Coast manufacturers.

## New Members of Superintendents Association

● Three superintendents of the Crown Willamette Paper Company's specialty paper mill at Camas, Washington, have recently joined the American Pulp & Paper Mill Superintendents Association. They are: Henry E. Ostensen, Jack V. Savage and Gustaf A. Lorenz.

At Ocean Falls, B. C., Samuel L. Mackay of Pacific Mills, Ltd., another affiliate of the Crown Zellerbach Corporation, joined the superintendents association.

## Shelton Power Plant To Be Ready May 1st

● The improvements which will enlarge the production of both steam and electric power by the Central Power Plant owned jointly by Rayonier Incorporated and the Simpson Logging Company of Shelton, Washington, will be completed around May 1st.

The building was completed nearly a year ago but the installation of equipment was delayed. C. C. Moore & Company, Engineers, are installing the latest type boilers.

### Coast Exported Two-Thirds Of November Pulp Exports

● Of the 6,190 short tons of wood pulp exported by United States wood pulp mills in November of 1938, Pacific Coast mills exported 4,092 tons or 66 per cent.

From the Washington customs district 2,578 tons of bleached sulphite wood pulp, valued at \$243,257 was exported in November. Unbleached sulphite amounting to 570 tons and valued at \$20,214 was exported from Washington and 340 tons valued at \$15,040 was exported from the San Francisco district. From the Washington customs district 604 tons of "Other Wood Pulp," valued at \$23,332 was exported during November.

The United Kingdom was the largest buyer of American bleached sulphite pulp in November with 1,484 short tons valued at \$164,610. Argentina was second with 554 tons valued at \$19,648 and Belgium was third, taking 288 tons worth \$13,250.

Canada was the largest buyer of unbleached sulphite taking 1,611 tons worth \$51,541. The United Kingdom was second with 554 tons valued at \$19,648 and British India third with 340 tons worth \$15,040.

Canada was also the largest buyer of "Other Wood Pulp," taking 329 tons valued at \$9,935. The United Kingdom was second with 282 tons worth \$14,180.

### Port Angeles Union Urges Park Limits

● The Port Angeles, Washington, local 155 of the International Brotherhood of Pulp, Sulphite & Paper Mill Workers recently went on record as favoring additions to the new Olympic National Park to the north and east in preference to any extension of the existing western boundaries.

The action was reported as having been taken, "in the interest of the development of the pulp and paper industry and the gainful employment it affords . . . as well as in the interest of the national park itself."

### Port Angeles Local Stages Big Party

● The Port Angeles Local 155 of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers held a big party January 10th in honor of the new officers who were installed that evening.

The ladies were invited to attend and enjoy the banquet entertainment features and the talks by sixth vice-president John Sherman and international organizer James Killen, a past president of Local 155.

### Eastwood Wire Strike Settled

● The fourdrinier wire plant of the Eastwood-Nealley Corporation at Belleville, New Jersey, resumed operations early in January after being shut down for some time as a result of a strike.

The difficulty was settled in such a manner as to provide for improved efficiency of operations at the large plant where the Eastwood wires are manufactured. Eastwood are represented on the Pacific Coast by the Pacific Coast Supply Company of Portland, San Francisco and Seattle.

### Moody and Alvord Named General Electric Vice-Presidents

● Two Pacific Coast men, A. S. Moody of Portland and R. M. Alvord of San Francisco, were appointed commercial vice-presidents of the General Electric Company at a meeting of the board of directors in New York on December 30th.

The announcement by Gerard Swope, president of the company, stated that Mr. Moody has been manager of the Northwest District of the company since 1936, prior to which he was manager of the Northwestern territory. He was graduated from the University of California in 1906 with the degree of Bachelor of Science in electrical engineering and started work as a salesman in the San Francisco office of the Stanley G. I. Company the same year. In 1907 he went with the supply department of the General Electric Company at its San Francisco Office and the following year transferred to the Seattle office. In 1910 he was made manager of the supply department at the Portland office and in 1913 became assistant manager of the Portland Office. In 1923 he was appointed manager of the Los Angeles office and in 1924 manager of the Northwestern territory.

When Mr. Moody came to Seattle in 1908, his duties included contact with the Everett Pulp & Paper Company, which was the only mill in this district at that time. Since then he has seen great expansion in the pulp and paper industry and has followed its development with much attention.

In 1910 he came to Portland, when the only mills in the territory were those at West Linn and Camas. Very soon thereafter, the first sectional electric drive on a paper machine was installed at West Linn, an important advance in the application of electric power in paper manufacture.

Mr. Moody has always taken a keen interest in the pulp and paper industry in the West, and for many years has been acquainted with many of the prominent figures in the business.

● Mr. Alvord is manager of General Electric's Pacific District, consisting of California, Arizona and Western Nevada. Graduated from Iowa State College in 1904 with the degree of Bachelor of Science in electrical engineering, he immediately entered the G. E. test course at Schenectady and in 1906 was transferred to San Francisco as a salesman. He became manager of the supply department there, then manager of the San Francisco district office and in 1936 manager of the newly created Pacific District of the company.

### Paperboard Output Gained Again in November

● Showing an increase of 26 per cent over the like month last year, production of paperboard in the United States in November for the second successive month topped the output in the corresponding month of 1937, according to the Department of Commerce. At 344,445 tons, output for the month showed an increase of 72,438 tons over the 272,007 turned out by the industry in November last year.

Paperboard production in November showed the seasonal downward trend from October which was the high point for this year, but the decline was smaller than the drop from October to November last year and in 1936.

In the first 11 months of 1938, production of paperboard amounted to 3,487,321 tons, against 4,048,892 in the like period last year and 3,330,098 in the comparable period of 1936.

Rated capacity for the first 11 months of 1938 is placed at 5,641,332 tons, against 5,140,413 tons in the like period last year and only 4,566,178 tons in the first 11 months of 1936.

### Fibreboard Declares Preferred Dividend

● Directors of Fibreboard Products, Incorporated, meeting December 15th, declared the regular quarterly dividend of \$1.50 a share on the prior preferred stock, payable February 1st to stock of record January 16th, 1939.

### Puget Sound Pays Preferred Dividend

● The Puget Sound Pulp & Timber Company has declared the regular quarterly dividend of 30 cents a share on the 6 per cent convertible preferred stock, payable January 15, 1939, to stock of record December 30, 1938.

### Shelton Union Gives Big Christmas Party

● Annually, Local 161 of the International Brotherhood of Pulp, Sulphite & Paper Mill Workers, Shelton, Washington, gives a large Christmas party for the children of the district around Shelton.

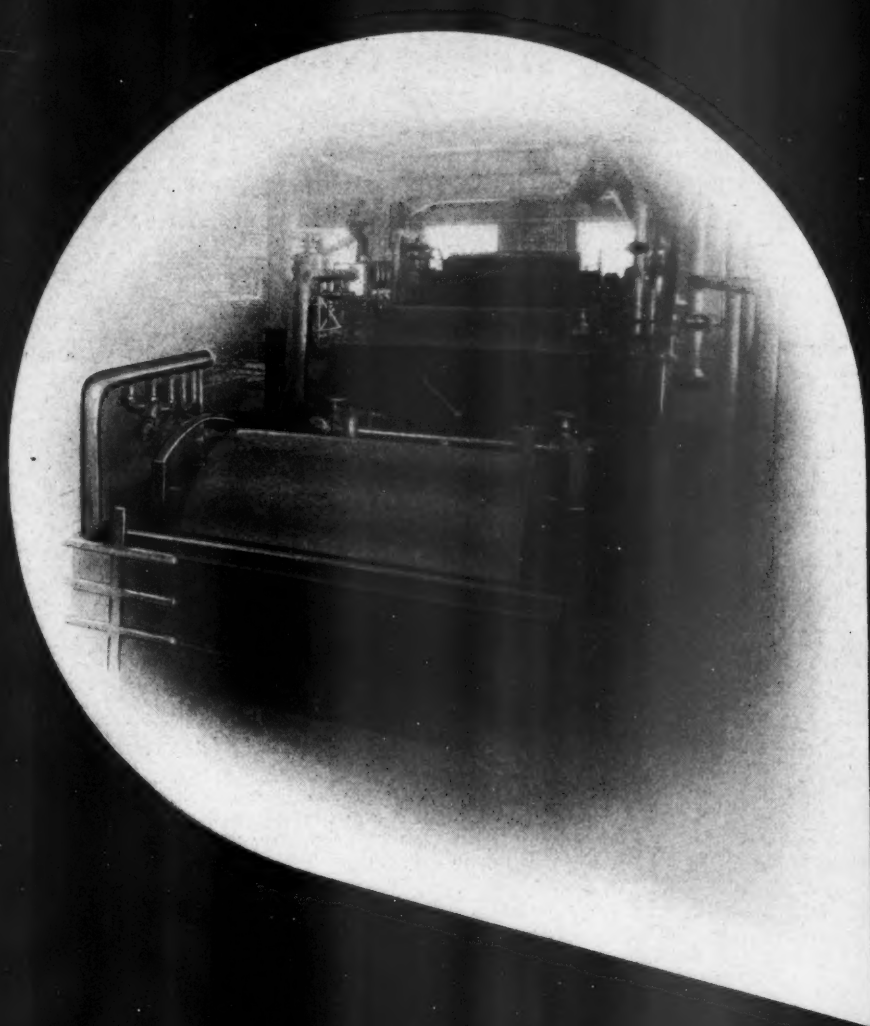
The children, guests of the local on December 23rd enjoyed a play and received oranges, candy and nuts from Santa Claus, who also listened to their requests for Christmas presents.

On the 24th, the union members followed their usual custom of distributing baskets of food throughout Mason county.

To finance the Christmas program the local held a big New Year's Eve ball. In charge of the program were Myron Lund, chairman, Hugh Thompson and John Cole.



**A. S. MOODY,**  
Vice-President of  
General Electric



## OLIVER Multiple Kraft Washing SYSTEM

- Higher concentration of black liquor to evaporators.
- Lower evaporation charges.
- Lowest wash-room salt cake loss.
- Less personal attention.
- Visible washing operation; convenient sampling.
- Lower capital cost; less floor space.
- Lower operating cost.
- Closed system; no weak liquor losses.
- Minimum unwashed pulp in system.
- Pulp completely washed within 1 hour after blowing.

Summed up, this means best washed pulp at lowest cost.

**OLIVER  
UNITED FILTERS  
INC.**



NEW YORK

CHICAGO

SAN FRANCISCO



# Trade Talk



of Those Who Sell Paper in the Western States

## Commercial Paper Enlarges Quarters

● The Commercial Paper Corporation, San Francisco, which last year moved into much larger quarters, has purchased the adjoining building at 46 Jackson Street, according to an announcement by Marcus Alter, president of the company.

The new acquisition of the company is 60 by 60 steel and brick building six stories and basement. The building is tenanted now, but will be used for a warehouse eventually.

## Zellerbach Paper Adds Janitor Supplies in Portland

● A complete sanitary and janitor supply department has been added by the Zellerbach Paper Company in the Portland, Oregon branch. It is under the supervision of J. B. Gilsdorf, formerly president of the Portland Sanitary Supply Co., whose stock they purchased.

## B., M. & T. Holds Sales Meeting

● The annual sales meeting for Northern California of Blake, Moffitt & Towne, was held December 27, 28, and 29 at San Francisco headquarters. New lines were gone over and company policies reviewed.

Following the last session of the meeting, all the salesmen attended a dinner at the Hotel Whitcomb, and then adjourned to the Civic Auditorium where they took part in the inaugural meeting of the "Sell San Francisco" campaign.

## Caldwell & Amos Awarded Service Pins

● Sumner C. Caldwell, at the annual sales meeting of the San Francisco and Oakland divisions, Zellerbach Paper Company, was presented with a 35 year pin by President Harold Zellerbach. Caldwell is head of the specialties department.

Zellerbach also presented a 10 year pin to Walter Amos, who has just been transferred to Eureka, replacing Vernon McIntyre, who returns to the San Francisco division.

## Hecht Takes a Short Rest

● Victor Hecht, Zellerbach Paper Co., San Francisco, is taking a mid-winter vacation in Southern California.

## B., M. & T. Celebrates Christmas

● Headquarters office of Blake, Moffitt & Towne held a most successful Christmas party, Christmas Eve.

## Pell Returns Safely Adventurous Trip

● The only tourists in Palestine during the recent bloody warfare between the British and the Arabs and the Jews were a San Francisco paper merchant, Rodman C. Pell, head of the Pelican Paper Company, and his wife, Florence.

The Pells returned home December 7, after a three months' trip that took them through Palestine and Syria. They described stirring scenes in the Holy Land: sandbags around Bethlehem; Nazareth bristling with machine gun nests; and Jerusalem under martial law with all residents forbidden under pain of death to leave their homes.

And yet, under these conditions, the Pells spent 16 days in Palestine, traveled hundreds of miles over roads that had been blown up by the Arabs, and felt safer than if they were crossing Market street.

"We were perfectly safe," said Pell. "You see all the time we were in Palestine we wore the Arabian headgear, the kofiyeh, and no Arabian sniper would have dreamed of taking a shot at us."

Some of the high spots of the trip were when the Pells engaged in falconry, the ancient sport of hunting partridges with falcons, and bagged eight birds. They also went gazelle hunting.

● They hired an automobile at Beirut, and with an Arabian driver and guide saw many of the out-of-the-way places. "I was astounded at the progress Jew-

ish colonies have made in the neighborhood of Tel-aviv," said Pell. "From a little village of 150, it has grown to be a great city of 140,000 population surrounded by Jewish farms."

Another most interesting place the Pells visited was Baalbek, in the Syrian desert. This city was built by the Romans in 200 B. C. and was destroyed about 300 A. D. Among the interesting sights in Baalbek are the remains of a Roman temple, of which three columns are still standing. These columns are solid granite shafts 66 feet high, with a circumference of 21 feet.

Also part of a temple wall remains, composed of three blocks of solid granite, 64, 65, and 63 feet long respectively, all 14 feet thick, and all 12 feet high.

Pell took 7,000 feet of colored film on the trip, making two pictures: "Palestine Under Martial Law," and "Camel Trails to Damascus."

He has made seven trips to little known parts of the globe, and is in much demand as a lecturer.

## Ward and Brooks Transferred

● Powell River Sales Company, Vancouver, announces that effective January 1, 1939, F. R. Ward has been appointed service representative working out of Los Angeles and Anson Brooks has been appointed to similar duties in the Puget Sound area, with headquarters in Seattle.



ARAB HEAD DRESS carried Mr. and Mrs. RODMAN C. PELL safely through the recent rioting in Palestine. Mr. Pell is President of the Pelican Paper Company of San Francisco.



Y  
  
or-  
a  
be  
ur-  
  
he  
an  
m-  
ed  
st-  
of  
ns  
re  
a  
  
ns,  
n-  
re-  
et  
  
on  
es-  
el  
  
le  
ch  
  
n-  
n-  
p-  
g  
ks  
n  
rs



*Quality*  
**SULPHITE  
PULP**  
**PUGET SOUND  
PULP & TIMBER COMPANY**  
**BELLINGHAM, WASH.**  
**DOMESTIC & EXPORT  
SHIPMENTS**

## Two Kellys Head General Paper Company

● Two well deserved promotions placed two genial Irishmen, with the grand old name of Kelly in charge of the destinies of the General Paper Company, San Francisco, and Los Angeles paper jobbing firm, late last month. Oddly enough, the Kellys are no relation to each other.

Elected to take the place of Charles Paganini as president of the General Paper Company is Robert L. Kelly, who will continue to make his headquarters in Los Angeles, acting as president of the company and manager of the Los Angeles division.

Robert Kelly has been manager of the Los Angeles branch of the General Paper Company for the past year. He has been in the employ of the General Paper Company for the past 15 years, prior to which time he worked for the Zellerbach Paper Company, Seattle Division.

Taking the place of Harry Bean, who with Mr. Paganini formed the Seaboard Paper Company of San Francisco, last November, after being with the General Paper Company for a number of years, is J. W. Kelly. He was appointed manager of the San Francisco branch of the General Paper Company. Originally in the printing business in Nevada, Mr. Kelly came to San Francisco after the War, and has been with the General Paper Company for the past 11 years, five of them as sales manager.

## Colton Says Business Will Be Good—IF

● Louis A. Colton, vice-president in charge of purchasing for the Zellerbach Paper Company, San Francisco, says in an article appearing in the Bulletin of the National Association of Purchasing Agents, that 1939 business will be good—IF. Quoting Mr. Colton:

"To write a forecast when the world is at peace is not so difficult. With the chaotic conditions now prevailing throughout the civilized world—China, Spain, Germany, France, Tunis and our own Uncle Sam flirting with South America, one would have to be a seer or a King Solomon even to think intelligently.

"Will 1939 be a good year? Yes, if—My own idea on the situation, based on recent large failures and a general let-down in business the last 60 to 90 days, and covering the first half of 1939, is about as follows:

"1. Prices no higher than now—lower if anything.

"2. Business better slightly. More stability and confidence since the ruption of ballots of November 8.

"3. A gradual return of the business world confidence based largely on the attitude of Congress.

"4. Well on the way to complete stability after June, 1939. All of my four points are not based on what might take place. A war in Europe—a peace in Spain—a surrender of China—or a full co-operation or lack of it on the part of the South American republics, would change the picture overnight.

"To the business world, 1939 will be the most momentous year in a century. Everything is stewing now—what kind of a dish will the world's cooks present for our consumption?"

# Paper Mill Men's Club Holds Third Christmas Party

For 24 Boys of Los Angeles

● That "kind o' feel in the air, when the Christmas time sets in," of James Whitcomb Riley was very much present on December 22 when the Paper Mill Men's Club of southern California gave its third annual Christmas party. The honored guests of the occasion were twenty four under-privileged boys.

The party took place at the Los Angeles Athletic Club. Sixty members were in attendance. George C. Wieman, president, welcomed the guests and members extending the seasons greetings of the club to all. Other officers at the speakers table were Al C. Hentschel, vice-president, Fran Jenkins, secretary, and Charles Spies, treasurer. Kenneth Ross headed the Christmas Party Committee, composed of Ross, H. T. Rottler and William O'Malley, whose earnest efforts made the party such a success.

Master of ceremonies, Cort Majors, Southern California sales manager for Fibreboard Products, Incorporated, in introducing the guest football players from University of Southern California, recalled the days some eighteen years ago when he played for University of California, outlining his own feelings prior to the U. C.-Ohio State game, a circumstance similar to that faced by the S. C. players looking forward at that time to the Duke game.

Mr. Majors then introduced Bob Hoffman, left half in the Southern California backfield, who among other remarks stated that the hardest game of their season so far had been University of Washington, their best University of California, and that despite general comments to the contrary in his opinion Duke would be no push-over. He stated that like Stanford's game with Columbia, wherein the western team was rated a sure winner, the Duke game might well prove the same sort of an upset. Right half in Southern California's backfield, "Red" Morgan, was introduced next. Morgan added weight to Hoffman's remarks and said he thought Duke would be a tough team to face. Captain Don McNeil, center, spoke next and was followed by Harry Fisher, linesman,

Past presidents Frank Philbrook and Ed Smith were called on to extend their seasons greetings to the group. "Billie" Meyers led the gang in singing old time and Christmas songs. Speaker of the day, Judge LeRoy Dawson told of his observations and experiences as Los Angeles "toughest" traffic judge, and why he was "tough" salting his remarks well with wit. He also described some of his overseas experiences during the World War.

There followed a magician's act put on by a very young and very capable prestidigitator, Zundel. Then came Santa Claus (Bill Charbenneau), and his helpers, C. A. Stewart and K. J. Skinner to present the young men with their Christmas gifts. Each boy received a corduroy jacket, an official Boy Scout flashlight and knife and chain and bags of fruit and candy. Certain of the members noted with interest that some of the boys were still treasuring gifts of the previous year, having kept them carefully since.

The attractive programs were presented by the Capital Envelope Company and the Hawley Pulp & Paper Company. Walter Genuitt, sales manager of the California Fruit Wrapping Mills at Pomona, was unable to attend, but sent two crates of oranges.

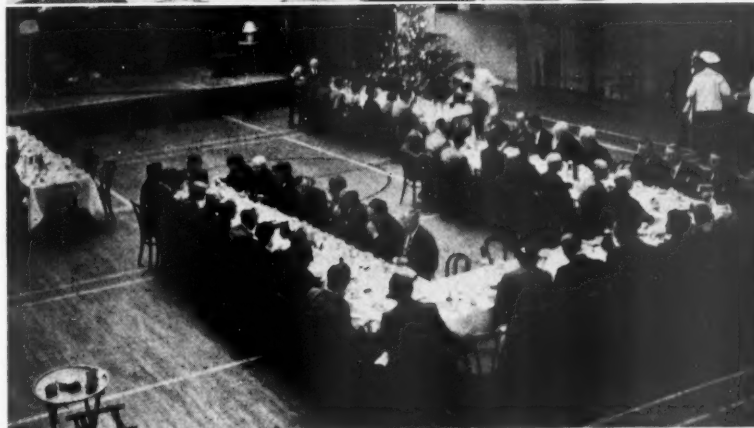
## Zellerbach Personnel Transfers

● On December 16, the following personnel changes were announced by the Zellerbach Paper Co., San Francisco: J. W. Knapp, was transferred to headquarters wrapping paper department, in charge of Lily Tulip merchandise; F. C. Hunt, was appointed sales manager of the wrapping paper department, San Francisco; Edward Steiger returned from headquarters to San Francisco division as assistant to the sales manager.

## Crown Introduces New Striped Kraft Wrapping

● A new style of stripe on its kraft and sulphite wrapping paper is being produced by Crown Willamette Paper Co., Division of Crown Zellerbach Corporation, at its Camas, Washington, plant.

Company officials state that the new stripe has been introduced to give the paper more sales appeal and a better appearance.



At the PAPER MILL MEN'S CHRISTMAS PARTY, top left to right, Judge LeROY DAWSON, who spoke; GEORGE C. WIEMAN, President of the Club; and KENNETH ROSS, Chairman of the Christmas Party Committee.

Center, the paper men's party for 24 boys of Los Angeles. Below, Two of the University of Southern California's football players, "RED" MORGAN on the left and BOB HOFFMAN in the center, who spoke to the boys; and on the right is the Master of Ceremonies, CORT MAJORS, Sales Manager in Southern California for Fibre-board Products, Incorporated.

## Zellerbach Party a Big Success

● Quoting from the Zellerbach Paper Company's intra-mural organ "Sales Ahead": "We haven't any reports as yet regarding the Christmas activities at other divisions, but we can certainly vouch for the fact that the party participated in by the San Francisco division and headquarters was a humdinger! "The 'Zello' act laid them in the aisles and it will be a long time before we forget Chapin Hunt's announcements regarding Zee in those four delightful colors."

## Testing for Water Vapor Permeability

● Wrapping and packaging materials impervious to moisture are demanded for the proper protection of many food products and other hygroscopic articles of commerce. There are many other applications requiring membranes highly resistant to the passage of moisture. Adequate testing methods are essential in order for one to determine whether or not a given material is sufficiently resistant to the passage of moisture to serve a given purpose. Much interest has been shown recently in testing methods of this kind.

A contribution has recently been made by the National Bureau of Standards towards the improvement of such methods. A simple and effective way of affixing a specimen to a dish or permeability cell in preparation for a test of the permeability of a material to water vapor is described. Use is made of simple equipment commonly found in the laboratory, or easily improvised. The specimen is sealed in a positive manner to the permeability cell by means of wax, and by the use of a templet the area to be exposed is made definite and clear-cut. The method is adaptable to various forms of dishes and cells, and allows the specimen to be sealed in at any desired height in the cell, thus eliminating certain errors that commonly arise in testing the permeability of membranes to water vapor.

Details will be found in "Notes on attaching a membrane to a water-vapor-permeability cell," by F. T. Carson, which appeared in the November 3, 1938, issue of Paper Trade Journal.

## Effect of Filling and Sizing Materials of Stability of Book Papers

● The National Bureau of Standards has been carrying on research during the past four years to determine the extent to which the composition and manufacturing processes influence the stability of fine printing, on "book," paper. A report on the pulps commonly used for such paper has been published. A more recent study reported in the November issue of the Bureau's Journal of Research, by Shaw and O'Leary, gives special consideration to the effect of filling and sizing materials introduced in manufacture. The study was made primarily to obtain information to assist in the classification of book papers according to their relative permanence quality, and the findings afford buying guidance, particularly to anyone interested in the preservation of valuable records.



The kinds of fillers on the market have increased in the last few years, but little was known about their effect on the permanence of paper. Four types of fillers were used in the Bureau work. They comprised clay, titanium pigments, zinc sulfide pigments, and calcium carbonate or "chalk." The sizing agent was resin soap prepared from resin and soda ash and was precipitated with papermaker's alum, aluminum sulfate. The fibrous materials covered the range of those commonly used in the fine printing papers.

Seventy-two experimental papers were manufactured in the Bureau's semi-commercial mill. To determine the longevity of the papers by the natural aging would take years from the time they were manufactured. The Bureau believes that heating the papers at 100° C for 72 hours accelerates the normal slow deterioration due to the impurities in papers, and that their comparative inherent permanence quality can be evaluated on the basis of resistance to change in the heat treatment. Therefore, their stability was determined in this way.

The strength of the experimental papers decreased with increasing filler content, but was influenced by the amount, not the type, of filler present. Since strength of paper is contributed principally by the fiber of which it is made, obviously when part of the volume is occupied by filler there is a proportional decrease in the strength of the sheet. There was no pronounced difference in the relative effect of the non-alkaline fillers on degree of sizing. The non-alkaline fillers had less effect than calcium carbonate in reducing sizing values. Although the sizing values of the carbonate-filled papers were not high the papers were sized sufficiently to be written on with ink and for ordinary printing processes.

Rag and purified wood-pulp papers were more stable to the heat test than the sulfite-soda wood-pulp papers. Non-alkaline fillers had no apparent harmful influence on the stability of any of the papers, and the calcium carbonate had a protective or inhibiting effect in aging. Resin had little effect on stability. Acidity was an important factor in deterioration. Attack on the cellulose was increased as the amount of alum, an acid salt, was increased, in either the unsized or the resin-sized papers.

Yardsticks of paper production are not sufficient, however, to insure paper of lasting quality. Resistance to deterioration from internal causes is only part of the story. The conditions under which the paper is stored and handled is the other part. The effect of external deteriorative agencies—light, temperature, humidity, acid pollution of air—and recommendations as to storage conditions for prolonging the life of paper have been previously reported by the Bureau.

The paper is designated Research Paper RP1149, and separate copies can be secured from the Superintendent of Documents, Washington, D. C., for 10 cents each.

### Westinghouse Adapts Electric Eye to Paper Cutting

Recently engineers of the Westinghouse Electric & Mfg. Co. have adapted a single photo-tube, amplifiers and a small reversible motor to take the kinks out of paper cutting. Light from a small lamp passes through four small circular

lenses revolving 1,800 times a minute on the motor's shaft.

In operation, these four revolving light beams strike a roll of paper on which is printed a dark narrow guide line and are reflected back through the photo-tube. As long as the light beam strikes only the light surface of the paper roll, the resistance of the photo-tube remains uniform, but as soon as the beam intercepts the dark guide line, the tube's resistance changes.

Two thyatron tubes amplify the electrical energy of the photo-tube and change the voltage of the motor, causing it to operate in the direction required to bring the paper roll back into line so that mechanical cutters can follow a straight line.

### Simplification of Sizes of Stock Folding Boxes

● The National Bureau of Standards announces that Simplified Practice Recommendation R172-38, Stock Folding Boxes for Garments and Dry Cleaning became effective September 1, 1938.

This recommendation, which is based on a survey of production and sales to determine the sizes most frequently used, lists dimensions of boxes and thicknesses of boxboard for stock folding boxes (automatic and lock-corner types) used by garment and specialty stores, as well as dry cleaning and tailoring establishments. The sponsors believe that through the establishment of this simplification program, the users who buy stock boxes in relatively small quantities should be able to fill their needs more economically, since, under the plan, producers will carry in stock at all times the selected standard sizes, thus obviating the necessity for special manufacture.

A standing committee, composed of representatives of the industry and allied interests, will have charge of this recommendation with a view to maintaining it abreast of current practice. The members of this committee as well as the acceptors of the recommendation will be listed in the printed issue, which will include, also, a brief statement of the development of the project.

Until the printed booklet is available, free mimeographed copies of the recommendation may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C.

### Imports, Exports of Pulp and Paper in November

● Imports of paper base stocks during the month of November, 1938, increased approximately 2 per cent, with a total value of \$8,085,953. Imports of paper and its manufactures registered a slight increase as compared with the month of October, having a total value of \$11,387,980. An increase in the imports of bleached sulphite pulp and unbleached sulphate pulp are the main reasons for the increase in the imports of paper base stocks, according to the Bureau of Foreign & Domestic Commerce of the U. S. Department of Commerce.

Imports of bleached sulphite pulp increased approximately 34 per cent during the month of November with a total of 40,279 tons as compared with 30,029 tons in the month of October. Imports of this commodity, however, for the 11 months of this year were about 38 per

cent lower than the imports during the corresponding period in 1937. Unbleached sulphate pulp imports increased during November approximately 40 per cent, with a total of 37,427 tons. As in the case of bleached sulphite, imports of unbleached sulphate were well under those for the comparable period of last year. Other items of paper base stocks which increased during the month of November were unbleached and bleached mechanical wood pulp, unbleached sulphite, and bleached sulphate wood pulp. Rags for paper stock and all other paper stock imports increased during the month of November.

In the paper and its manufactures import schedule, 8 items advanced during the month of November over the preceding month. These items were kraft wrapping paper, other wrapping paper, writing and drawing paper, paper and envelope combinations, tissue not over six pounds to the ream, paperboard and pulpboard, n. e. s., cigarette paper, and hanging paper. The largest item by value on the paper and its manufactures schedule, newsprint paper, with a November value of \$10,391,418, was slightly less than 1 per cent below the October total, and approximately 23 per cent under the total imported during November, 1937.

● Exports of paper base stocks from the United States during the month of November increased approximately 27 per cent over the preceding month, with a total value of \$502,353. Exports of paper base stocks, however, for the first 11 months of this year were approximately 60 per cent less than during the comparable period of last year. The largest item of paper base stock by value, bleached sulphite wood pulp, with a November value of \$260,067, increased approximately 50 per cent over the preceding month. An increase in shipments to the United Kingdom was mainly responsible for this pick-up. Exports of this commodity for the first 11 months of this year were almost 70 per cent below the total for the same period last year. This is due largely to a complete falling off of our trade with Japan in this commodity.

Exports of paper and its manufacture, with a total value of \$2,236,768, are approximately 8 per cent below the preceding month's total. However, there has been a noticeable pick-up in the total export of paper and its manufactures within the last three months. Exports of cover paper for the first 11 months of this year, with a total of 1,667,730 pounds, was 11 per cent higher than the total for the first 11 months of 1937. This 11-month total for this year is also higher than the total exports of this commodity during 1937. The Netherlands, Canada, and the Philippine Islands were the most important markets during the month of November for this commodity.

Greaseproof and waterproof paper exports increased 23 per cent during the month of November, with a total of 638,354 pounds. This represents a value of \$148,576. Canada purchased approximately one-third of the exports of this commodity, with Mexico, Argentina and Australia taking approximately 25 per cent of the remainder. Kraft wrapping paper exports, with a November total of 916,130 pounds, were approximately 9 per cent higher than the October exports. In addition, the 11-month total of this commodity was 48 per cent higher than the comparable period last

year, and already exceeds by over 3,000,000 pounds the total shipped in 1937. Cuba, Philippine Islands and Canada were the major customers for this commodity. Canada has become a major market for this item during 1938, being well ahead of its purchases of kraft wrapping paper from the United States during 1937.

Exports of tissue and crepe paper, with a total of 965,821 pounds, were slightly higher than the preceding month. The 11-month export in this commodity was approximately 20 per cent above the total for the corresponding period in 1937. Canada has purchased approximately 50 per cent of the total United States exports in this commodity. Exports of wrapping paper except kraft increased approximately 48 per cent during the month of November, with an aggregate of 3,204,418 pounds. This was the second highest monthly shipment since the beginning of the year. The Philippine Islands, purchasing 1,813,932 pounds during the month of November, was the major United States market in this commodity. Exports of boxboard, while 18 per cent below the October figure with a November total of 7,654,725 pounds, were approximately 40 per cent ahead of the 11-month total during 1937. The 11-month total for 1938 is approximately 8,000,000 pounds greater than the total 1937 shipments.

Bristols and bristol board exports during the month of November increased approximately 125 per cent, with a total shipment of 290,756 pounds. Cuba was the major purchaser of this commodity during the month of November. Other paperboard exports, while approximately 60 per cent below the October figure

with a total of 2,573,035 pounds, were about 19 per cent greater for the 11-month period of this year as compared with the corresponding period of last year. Total shipments of this commodity for the first 11 months of this year already exceed the shipments during 1937 by approximately 3,000,000 pounds. Canada is the best market for exports from the United States of this commodity, with the Union of South Africa, the Philippine Islands, Cuba, United Kingdom, and Mexico other leading purchasers. Of particular note in the trade in this commodity is the fact that the United Kingdom has increased its purchases an appreciable amount this year as compared with 1937.

Sheathing and building paper exports increased approximately 22 per cent during the month of November, with a total of 2,078,411 pounds. This was the best month of the year to date in the trade in this commodity also. Argentina ranked first in the purchases of this commodity during the month of November, taking a total of 805,745 pounds. Canada followed closely with a total November import from the United States of 719,652 pounds. Fiber insulating board or bat also increased approximately 40 per cent during the month of November, with a total of 4,191,442 square feet. The Philippine Islands and the Union of South Africa ranked first and second respectively in the purchases of this commodity during the month of November.

Exports of boxes and cartons increased approximately 70 per cent during the month of November, showing a total of 1,129,112 pounds. The 11-month trade in this commodity was also approximately 9 per cent higher than the trade in the comparable period of last year, and already exceeds the total 1937 exports. Canada and the Philippine Islands are the ranking customers of the United States for this item. Other items which marked increases in exports over the month of October are: blotting paper, old and overissue newspapers, book paper uncoated, newspaper paper, and other paper stock.

### Develop New Type Automatic Auxiliary Generator Control

● The Westinghouse Electric & Mfg. Co., of East Pittsburgh, Pa., recently announced the development during 1938 of the "Silverstat," an automatic rheostat designed to keep powerful auxiliary generators from shirking or over working, no matter how heavy or light their loads.

This device, in its most compact form, takes up no more room than a cigar box, and its buttons are no larger than the polkadots on a man's tie, but it can maintain the voltage of generators within one or two per cent of normal.

The "Silverstat" includes a voltage-sensitive stationary coil energized by the generator to which it is attached. The coil is mounted on an iron magnetic circuit equipped with an air gap. A moving aluminum arm is so constructed that an iron armature on its lower end can

move against the pull of a spring, depending on the magnetic field set up by the voltage in the stationary coil. Pulled by the magnet or forced by the spring, the top end of the aluminum arm closes and opens in succession a series of silver buttons, each mounted at the free end of an individual leaf spring. The silver buttons are wired in sequence from the fixed ends of their leaf springs to consecutive steps of a stationary regulating resistance. By compressing or releasing these springs, the amount of resistance is controlled automatically.

### Clyde Swick Has Siege of Illness

● Clyde Swick, San Francisco manager of the Graham Paper Company, has been away from his desk on account of illness.

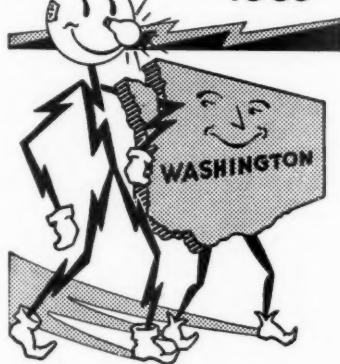
### Foley to Return to Vancouver in February

● Harold Foley, executive vice-president of Powell River Company, will return from Foley, Florida, some time in mid-February. He went south with Mrs. Foley to attend the usual Christmas family reunion. His father was long associated with the Brooks-Scanlon lumber, pulp and associated enterprises.

### Shelton Had a Dry Year

● The Shelton, Washington, mill of Rayonier Incorporated has maintained a record of the rainfall in Shelton for the past twelve years and announces that 1938 was the driest with but 48½ inches of rainfall. The wettest year was 1937 with 80 inches.

1889  
**GOLDEN JUBILEE**  
1939



MARCHING  
TOGETHER  
for over  
**50 YEARS**

**PUGET SOUND POWER  
& LIGHT COMPANY**



**PULP  
BLEACHING  
COMPANY**

**ORANGE  
NEW JERSEY**

**CELLULOSE  
PURIFICATION  
EQUIPMENT**



## “HOW CHEAP CAN YOU MAKE IT?”

**ALL PAPER MANUFACTURERS** are familiar with the cry for low prices. To the makers of strawboard it is the “every day” appeal. Strawboard is generally considered a “non-profit” item with those who purchase it. Whether used as liners or wrappers, or, as illustrated above, for backing scratch pads, strawboard must be both good and inexpensive.

It is more than coincidence that leading manufacturers of strawboard equally with those of the finest writing and printing papers, rely on Hamilton Felts for economical operation of their paper machines. Regardless of the furnish, whether it be coarse or fine, Hamilton Felts remove the water at higher speed and lower cost and they improve the texture and finish of the product. Prove for yourself how much longer they last and how much less they cost per ton of production.

From the thinnest tissue to the heaviest boards there is a Hamilton Felt that will do your work better, faster and at lower cost.

### SHULER & BENNINGHOFEN

HAMILTON, OHIO

Miami Woolen Mills, Established 1858

# Hamilton Felts

## PACIFIC PULP & PAPER INDUSTRY

### Pulp & Paper Employees Recommend Park Extension

● Citing dangers to industry and payrolls of any further encroachment on the West End timber resources by additions to the Olympic national park, the Pacific Coast Pulp and Paper Mill Employees' Association, meeting at Portland, Oregon, recently, adopted the following resolution:

“Whereas: The Congress of the United States at its last regular session passed H. R. 10024, establishing the Olympic National Park in the State of Washington, thereby creating a well-balanced park of seven hundred and eighty thousand acres, and

“Whereas: In section six of said act it empowers the President of these United States to increase the boundaries of said park to eight hundred and ninety-eight thousand two hundred and ninety-two acres, which will include land lying west of the range line between ranges ten and eleven, and

“Whereas, The rayon and pulp mills located on the north side of the peninsula are dependent on a continuous supply of pulp timber to the end that the employees shall be gainfully employed, now therefore.

“Be it resolved: That the Executive Board of the Pacific Coast Pulp and Paper Mill Employees' Association, in session assembled at the Carlton Hotel, Portland, Oregon, this eleventh day of November, 1938, and representing all of the employees of the Pacific Coast Industry do sincerely petition that in the interest of the development of the Pulp and Paper Industry and the gainful employment it affords our members, as well as in the interest of our National Park itself, that any addition made to the area should be made to the north and east, including such areas as Hurricane Ridge, Mount Angeles and Deer Park, rather than any extension of the western boundaries.—Signed, Maxwell Loomis, secretary.”

Concern of the pulp mill employees is that addition of the Hoh and Bogachiel regions will include timber needed for pulp mills on Grays Harbor, Olympia, Port Angeles, Port Townsend and Shelton.

### Relation of Fiber Treatment to Paper Characteristics

● As an extension of its cooperative work with the Lithographic Technical Foundation to improve the performance of paper in multicolor offset printing, the National Bureau of Standards is undertaking a further study of the relation of beater practice to the characteristics of paper. Some information of this kind was obtained by trials in commercial paper mills, but much more extensive experiments are to be made in the Bureau semi-commercial mill where the papermaking variables can be more carefully controlled.

Hygroscopicity, curling, wavy edges, grain, expansivity, and permeability to water and ink are some of the properties of paper which are of great importance in multicolor printing. These properties are known to be related to the manner in which the fibers are beaten but little is known of the fundamental relationship. The wood and rag fibers commonly used in making lithographic papers will be given varying degrees of beating, both singly and in combination. The relation between beating practice and sheet properties will then be determined by extensive laboratory testing and by printing tests.

It is hoped that the results of this work will be as beneficial as those obtained in previous studies which resulted in recommended moisture-control practice which has proved to be very helpful to printers.

The Foundation is continuing its support of personnel to assist in the research, with funds secured from several paper-making concerns.

### Production of Kraft Paper In South Africa

● At present kraft paper is produced in South Africa only by one mill. It is known that two other concerns are either being formed or are erecting plants for the manufacture of kraft and heavy wrapping papers. While South Africa has not heretofore been able to supply its requirements for kraft paper, with 3 mills in operation, the advantage of low paid labor, and a protective tariff of approximately \$0.012 per pound, it would seem probable that there will be little market for foreign papers.

It is understood that imports are almost entirely from Sweden, Norway and Finland. Purchases are made for the South African consumers by London or other British firms acting on their behalf. None of the consumers are known to buy direct from the producers for their own account. American Consulate General, Johannesburg.)





JEEPERS  
CREEPERS  
HANK,

# IT FLOATS!

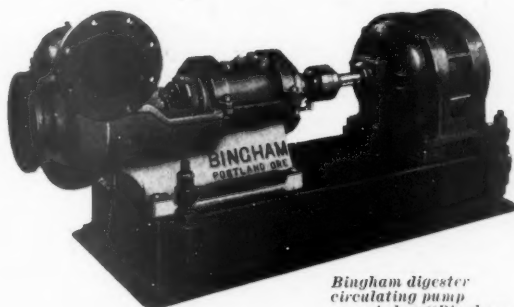
... both pump and motor are mounted on  
**FLOATING BASE!**

Here is a pump that has been specially developed by Bingham engineers to handle high temperature acids in digester circulating systems.

The Bingham Circulating Pump is made of special alloys to withstand the corrosive action of high temperature cooking liquors. Incorporated in the pump are such special recognized features as:

1. All bolted surfaces subjected to pressure are made circular for safety.
2. Horizontally split water cooled stuffing box for easy packing.
3. Stuffing box packing is subjected to suction pressure only—
- for minimum packing maintenance.
4. Hydraulically balanced adjustable rotating element.
5. Pump and motor mounted on Bingham FLOATING BASE.

"UNIVERSALLY USED  
IN SULPHATE AND  
SULPHITE MILLS"

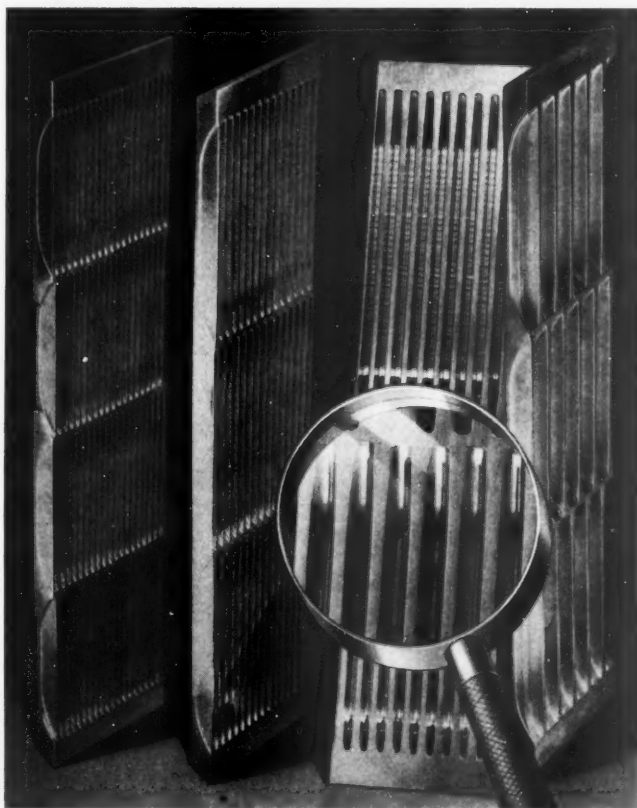


*Bingham digester circulating pump mounted on "Bingham floating base."*

# Bingham

705 S. E. MAIN STREET  
PORTLAND, OREGON

## PUMP COMPANY



The metal in

## Union Screen Plates

is always of uniform analysis. Quality of metal and accuracy of workmanship insures uniformly long service.

UNION SCREEN PLATES can be supplied in special "Open Back" design for chromium plating.

+

*Manufactured by*

UNION SCREEN PLATE COMPANY  
FITCHBURG, MASS.

+

*Represented by*

PACIFIC COAST  
SUPPLY COMPANY

SAN FRANCISCO PORTLAND SEATTLE

"NON-USERS  
ARE THE  
LOSERS"

**T  
E  
N  
A  
X  
F  
E  
L  
T  
S**

## **FINISH AND TRIM**

### **A Challenge to 1939**

Check another completed year of Satisfactory Service for TENAX FELTS... Keeping constantly abreast of changing methods and conditions, the makers of TENAX FELTS pledge themselves, during this new year, to add another milestone to their record of Cooperative Endeavor and Enduring Accomplishment.

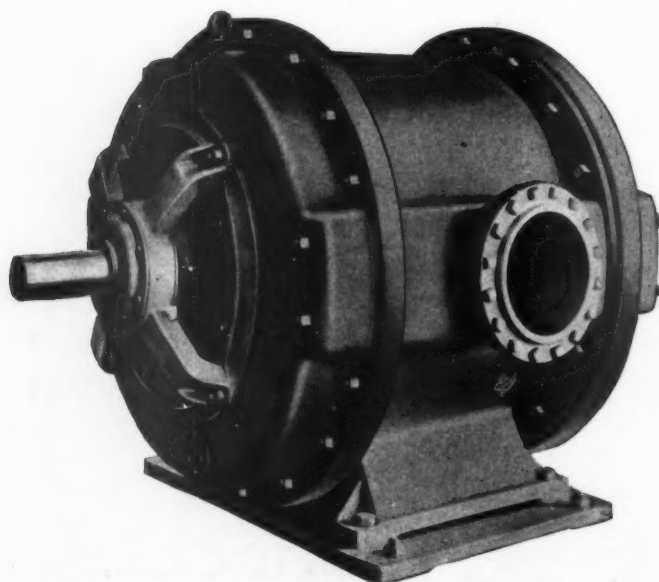
*"Non-Users Are the Losers"*

**LOCKPORT FELT COMPANY**

NEWFANE, N. Y.

*Pacific Coast Representative: ALAN C. DUNHAM, Portland, Ore.*

## **ONLY NASH VACUUM PUMPS HAVE ALL THESE FEATURES.**

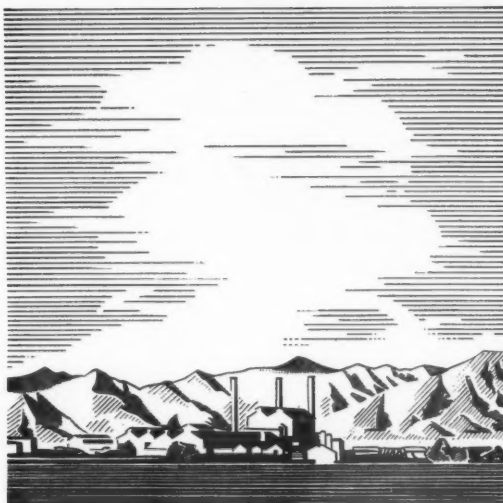


One Moving Element  
Non-Pulsating Vacuum  
No Internal Wearing Parts  
No Internal Lubrication  
Handles Liquid With Air  
No Expert Attendance  
Constant Efficiency  
Low Maintenance Cost

**THE NASH ENGINEERING COMPANY**  
SOUTH NORWALK, CONNECTICUT, U. S. A.

# SALT CAKE

98% +  
Sodium  
Sulphate



# SODA ASH

99½%  
Sodium  
Carbonate



Made at Trona  
on Searles Lake, California

## American Potash & Chemical Corporation

Western Office  
609 So. Grand Ave., Los Angeles

Plant at Trona, Calif.

Eastern Office  
70 Pine St., New York

*Manufacturers of Trona Brand Muriate of Potash, Three Elephant Borax and Boric Acid*

**APPLETON  
WIRES ARE  
GOOD WIRES**





## ORR FELTS

Weaving cloth for a suit of clothes is child's play compared to the manufacture of felts to clothe a paper machine. The little flaw that would pass unnoticed in the suit would utterly wreck a felt.

Felt making requires modern facilities and skilled workmanship. If you would like to see the way it is done . . . the way Orr does it . . . pay us a visit. We'll be glad to take you through our plant, which is the most complete, the most modern, and the largest paper mill felting plant in the world.

Therein lies the explanation of Orr Felt success on paper machines of every type, making every grade known, both here and abroad.

Call our nearest representative. He can be of assistance.

## The ORR FELT & BLANKET CO.

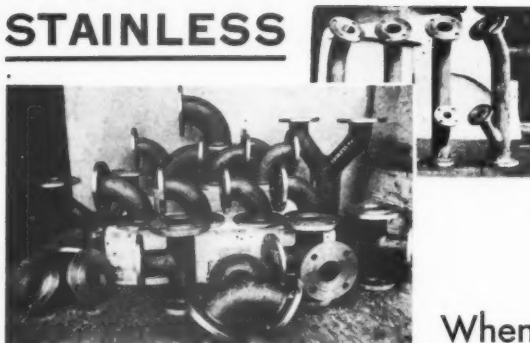
PIQUA, OHIO

Pacific Coast Representative: WALTER S. HODGES  
Pacific Bldg., Portland, Oregon



# ESCO

## STAINLESS



When making changes in any standard or special fittings we can serve you with **ESCO STAINLESS**

*Our Engineers Will Gladly Help You*

### ELECTRIC STEEL FOUNDRY CO.

Portland, Oregon

Seattle, Washington

## Wires THAT TELEGRAPH

A LOT OF Research


• Research? It's always going on at Lindsay—has been for more than 30 years—behind the scenes and "behind the seams."

There's a Lindsay wire for every need—with sewed, brazed or welded seam—each type prescribed to meet your exact case and to help you make better paper at a lower cost.

**THE LINDSAY WIRE WEAVING CO.**  
14025 ASPINWALL AVENUE  
CLEVELAND, OHIO

*Lindsay* **WIRES**

FOR PAPER MILLS





Pacific Building

PORTLAND, OREGON

Telephone  
Beacon 9354



## SUMNER IRON WORKS

EVERETT, WASH.

*The last word in*

## CHIPPERS

42 MACHINES IN THE  
LAST 7 YEARS

SIZES: 51", 66", 72", 84", 110"

*The*

# DRAPER

---

*felt*

**Draper Brothers Company**  
CANTON, MASS.

## Waterbury Felts

are made by

H. Waterbury & Sons Co.  
ORISKANY, N. Y.

Represented by: F. P. Wilder, New Heathman Hotel  
Portland, Oregon

## Edison

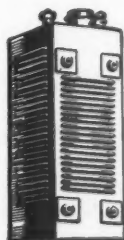


### NICKEL-IRON-ALKALINE BATTERIES

The preferred power battery for industrial trucks in the pulp and paper industry.

**Edison Storage Battery  
Supply Company**

Main Office & Factory: West Orange, N. J.  
Seattle San Francisco Los Angeles



# SULPHUR

## Freeport Sulphur Company

The Chanin Bldg., New York City  
122 East 42nd Street

... Mines ...

Freeport, Brazoria County, Texas  
Grande Ecaille, Plaquemines Parish,  
Louisiana

*Pacific Coast Sales Agents:*

## Balfour, Guthrie & Company

Seattle, Tacoma, Portland,  
San Francisco, Los Angeles and  
Vancouver, B. C.

# SULPHUR

## Appleton

*felts* MAKE  
GOOD  
PAPER

CHAS. M. SERVER 209 TERMINAL SALES BLDG.  
PORTLAND, OREGON

## USE LEAD

## NORTHWEST LEAD COMPANY

SAN FRANCISCO SEATTLE LOS ANGELES

## PULP —

## Perkins-Goodwin Company

Established 1846  
30 Rockefeller Plaza, New York Suite 3505

— PAPER

## A Prosperous New Year to Our Many Friends

MERRICK SCALE MFG. CO., Passaic, New Jersey

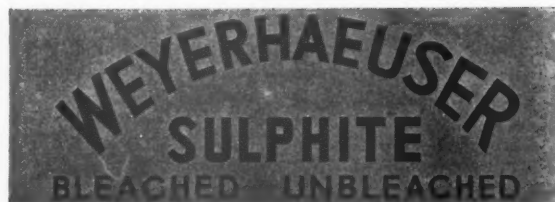
Irving R. Gard & Company, 908 Lowman Bldg., Seattle, U. S. A.



## A PLUS in Lubrication?

Yes, it's Shell's "Invisible Element"... a combination of Shell's world-wide resources in laboratories and refineries; decades of experience and research by Shell's engineers and scientists. It is the aim to make lubrication more efficient, more economical for industry.

SHELL INDUSTRIAL LUBRICANTS



## HESSE-ERSTED IRON WORKS

PULP and PAPER MILL  
MACHINERY

816 S. E. Taylor

PORTLAND, ORE.

## "Gears From Gear Specialists"

WESTERN GEAR WORKS • Seattle



## J. O. ROSS ENGINEERING COMPANY

350 Madison Avenue, New York, N. Y.  
2860 N.W. Front Avenue, Portland, Ore.

E. G. DREW—Pacific Coast Representative

## AIRPLANE Photographic SURVEYS



Are especially useful in preliminary work, showing Sites and Stands of Timber, Etc. Write us.

Photo Maps to Scale, Views

## BRUBAKER AERIAL SURVEYS

412 McKay Building, Portland, Oregon  
ATwater 1903



## STANLEY J. SELDEN INDUSTRIAL ENGINEER

INDUSTRIAL PLANTS  
PULP AND PAPER MILLS

319 PERKINS BUILDING PHONE MAIN 8406  
TACOMA, WASHINGTON

## O. C. SCHOENWERK

Consulting Engineer

2701 COLUMBUS BLVD.  
CORAL GABLES, FLORIDA

Pulp and Paper Mill  
Design — Construction

## Cavin, Marshall and Barr **CONSULTING ENGINEERS**

A Firm of West Coast Engineers, Experienced in PACIFIC COAST Problems of Mill Design, Operation and Supervision of Construction.

HAROLD D. CAVIN HARRY L. MARSHALL  
CHARLES M. BARR

1215 Exchange Building, Seattle, Washington

## CHEMIPULP PROCESS INC.

CHEMICAL PULP MILL ENGINEERS

Chemical Pulping Processes ✕ Operating Surveys  
Appraisals ✕ Estimates

500 WOOLWORTH BUILDING 3311 FIRST AVENUE SOUTH  
WATERTOWN, N. Y. SEATTLE, WASH.

- Associated with -

CHEMIPULP PROCESS LIMITED  
403 Crescent Building Montreal, Quebec

## L. A. DEGUERE

Mill Architect and Engineer  
WISCONSIN RAPIDS, WIS.

### **PULP and PAPER MILLS**

Ground Wood, Sulphite, Sulphate, Surveys,  
Estimates and Reports — Water Power  
Development

Reference—A long list of successful plants in various parts of U. S. and Canada

Over 25 years actual experience in  
designing and building of mills.

## Hardy S. Ferguson & Co.

Consulting Engineers

200 Fifth Avenue, NEW YORK CITY

Hardy S. Ferguson—Member A.S.C.E., A.S.M.E., E.I.C.  
Moses H. Teaze—Member A.S.M.E., E.I.C., A.S.C.E.

Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of

Pulp and Paper Mills and other Industrial Plants.  
Steam and Hydro-electric Power Plants  
Dams and other Hydraulic Structures.

## GEORGE F. HARDY

Consulting Engineer

305-309 Broadway, NEW YORK CITY, N. Y.

MEMBER—Am. Soc. C. E.—Am. Soc. M. E.—Eng. Inst. Can.

Consultation—Reports—Valuations—Estimates—Paper and Pulp Mills  
—Hydro-Electric and Steam Power Plants—Plans and Specifications.

## Chromium Corporation of America

**CRODON**  
The Chrome Plate

Charles H. Belvin, Jr.  
4651 N. E. 36th Ave.  
Portland, Oregon

NEW YORK WATERBURY CLEVELAND CHICAGO

## Roche Harbor Lime and Lime Stone—are standard for good pulp

For Better Bleach  
For Better Filler  
For Better Tower Use  
For Less Impurities



Roche Harbor is the dean of the industry and is noted for unlimited supply, superior quality and unexcelled service.

Roche Harbor Lime and Cement Co. Paul H. McMillin, Pres.  
Roche Harbor, Wash.

## PULPWOOD CLEANING MACHINES

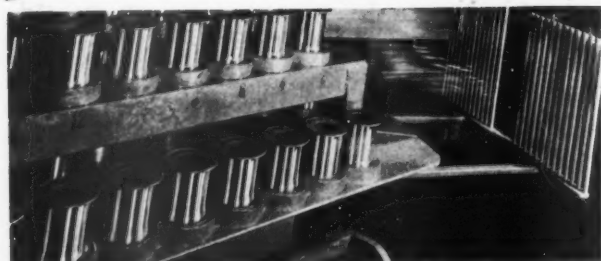
\* \* \* BARKERS \* \* \*

KNOT BORING and ROUTING MACHINES  
CONCAVE KNIFE AND BROUING BIT GRINDERS

\* \* \*

STETSON-ROSS MACHINE CO.  
SEATTLE, WASHINGTON

# Small WIRES ENERGIZED!



**EACH STRAND** will take its place in **EASTWOOD Weaves**, to share a part in wear resistance. ★ Under the **EASTWOOD** process of wire conditioning, these research-proven alloys challenge mill conditions. ★ **PERFORMANCE** is the real measure of **EASTWOOD WIRES**. They reach the ultimate in service output and uniformly superior **FINISH**.

For more than sixty years "EASTWOOD" has set the Standard of Comparison.

## EASTWOOD-NEALLEY CORP.

At Belleville, N. J. Since 1877  
Pacific Coast Sales Agents  
PACIFIC COAST SUPPLY COMPANY • San Francisco, Portland, Seattle



## DRYER FELTS

Moisture in the felt, under operating conditions, causes fiber deterioration.

The selection of a felt with suitable porosity, results in less condensation in the felt, increasing life and decreasing steam cost.

The California Cotton Mills is prepared to furnish Three-Ply dryer felts in various weave designs to meet each machine condition.

Manufactured in Oakland, Calif., by

**California Cotton Mills Co.**

**Pacific Coast Supply Co.**

Distributors

## STEBBINS QUALITY Is ECONOMY

**CAREFULLY** selected materials plus efficient, intelligent application of these materials assures the sulphite mill operator today the lowest lining costs per ton of pulp in the history of the industry.

STEBBINS specializes in the lining of all types of pulp and paper mill equipment in which a ceramic lining may be used for protection against corrosion or slime formation.

Your inquiries will have the prompt and careful attention of our engineers.

## STEBBINS ENGINEERING CORPORATION

TEXTILE TOWER  
SEATTLE

## INDEX OF ADVERTISERS

A		L	
Albany Felt Co.	3	Lindsay Wire Weaving Co.	44
American Potash & Chemical Co.	43	Link-Belt Co. Inside Back Cover	
Appleton Wire Works, Inc.	43	Lockport Felt Co.	42
Appleton Woolen Mills	46		
B		M	
Beloit Iron Works	1	Merrick Scale Mfg. Co.	46
Bingham Pump Co.	41		
Black-Clawson Co.	30	N	
Brubaker Aerial Surveys	46	Nash Engineering Co.	42
Bulkley Dunton Pulp Co.	4	Northwest Lead Co.	46
		Norton Co., The	
C			Outside Back Cover
California Cotton Mills	48	O	
Cavin, Marshall & Barr	47	Oliver United Filters, Inc.	33
Chemipulp Process, Inc.	47	Orr Felt & Blanket Co.	44
Chromium Corp. of America	47		
D		P	
DeGuere, L. A.	47	Pacific Coast Supply Co.	41
Draper Brothers Co.	45	Perkins-Goodwin Co.	46
		Puget Sound Power & Light Co.	39
E		Puget Sound Pulp & Timber Co.	35
Eastwood Nealley Corp.	48	Pulp Bleaching Co.	39
Edison Storage Battery Co.	45	R	
Electric Steel Foundry Co.	44	Roche Harbor Lime & Cement Co.	47
F		Ross Engineering Corp., J. O.	46
Ferguson & Co., Hardy S.	47	S	
Freeport Sulphur Co.	46	Schoenwerk, O. C.	47
		Selden, Stanley	47
G		Shartle Bros. Machine Co.	30
General Dyestuff Corp.	2	Shell Oil Co.	46
H		Shuler & Benninghofen	40
Hardy, George F.	47	Stebbins Engineering Corp.	48
Hesse-Ersted Iron Works	46	Stetson-Ross Machine Co.	47
Hodges, Walter S.	45	Sumner Iron Works	45
Hotel Multnomah	39	W	
Huyck & Sons Co., F. C.		Waterbury & Sons, H.	45
	Inside Front Cover	Western Gear Works	46
		Weyerhaeuser Timber Co.	46

● Profit by the ideas gained from thousands of practical cost-cutting installations handling every conceivable kind of material and employing all types of conveying and power transmitting equipment.



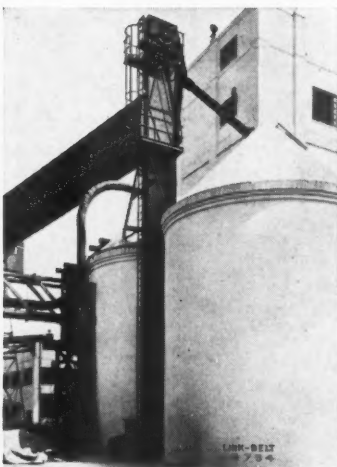
● Link-Belt makes them all, and recommends and applies each where it serves best. Submit your problems to Link-Belt. Catalogs sent on request. Address the nearest office.

# LINK-BELT

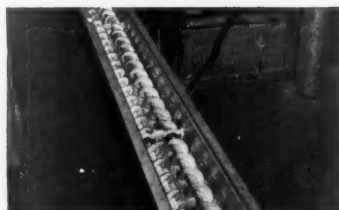
## • Elevators and Conveyors •



Belt Conveyor handling chips



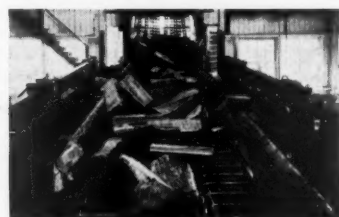
Bucket Elevator handling raw sulphur



Screw Conveyor handling pulp

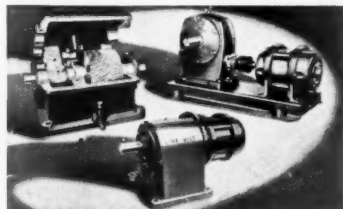


Hogged Fuel Conveyor

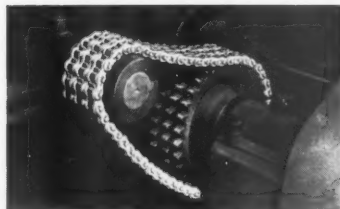


Picking Table Conveyor over chippers

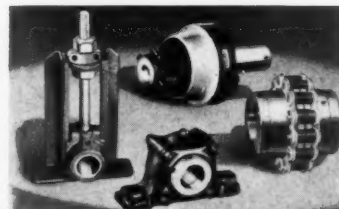
## • Positive Drives • and Power Transmission Equipment



Speed Reducers—Worm, Herringbone and Motorized types



Silverlink Roller Chain Drive



Take-ups, Clutches, Gears, Couplings

### LINK-BELT COMPANY

The Leading Manufacturer of Equipment for Handling Materials and Transmitting Power

San Francisco, 400 Paul Avenue   Los Angeles, 361 S. Anderson St.   Seattle, 820 First Ave., S.   Portland, 1637 N. W. 14th Ave.   Oakland, 526 Third St.  
Plants at San Francisco, Chicago, Indianapolis, Philadelphia, Atlanta, and Toronto   Branches in Principal Cities

7228R



*Norton Pulpstones give you higher  
quality pulp - improved finish -  
and, by reducing sulphite content,  
lower costs.*

*Norton Company  
Worcester, Mass.*



PACIFIC COAST REPRESENTATIVES:

PACIFIC COAST SUPPLY CO., Pittock Block, Portland, Ore.; 708 White Bldg., Seattle, Wash.; 343 Sansome St., San Francisco, Calif.